REPORT

SURVEY OF HOSPITALS AND NURSING HOMES

Territory of Hawaii

—

1946

Hospital Service Study Commission
Honolulu, T. H., March 1947

R E P O R T

SURVEY OF HOSPITALS AND NURSING HOMES

TERRITORY OF HAWAII (Ter.) Territorial Hospital Service Study Commission

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Survey and Report by Elizabeth D. Bolles, Survey Director, for the Hospital Service Study Commission, Honolulu, T.H.
March, 1947.

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LIMITED REPORT ON THE SURVEY OF HOSPITALS, TERRITORY OF HAWAII -- 1946

CHAPTER I - INTRODUCTION

When the Hospital Service Study Commission began its task of "A study of hospital services and costs, and the feasibility of establishing a territorial system of health insurance", as called for by Joint Resolution 12 of the 1945 legislature, it recognized that authentic and complete information about the hospital facilities of the Territory and their utilization by the public was basic to any consideration of a system. A review of available information showed a few studies 1/ made in years past on individual hospitals, or particular groups of hospitals, but no data, uniformly reported, that could be of use to the Commission, were on hand regarding all hospitals.

The Commission's prime recognized problem at this point was how to get the facts it needed.

Coincident with the recognition of the Commission's problems, an activity of hospital inventorying was in progress throughout the United States, initiated by the American Hospital Association but carried out by an independent study group known as the Commission on Hospital Care, in Chicago. Investigation of the procedure methods for that inventorying, developed by the Chicago Commission, indicated that these methods suited the purposes of the Hawaii study admirably and would constitute a considerable saving of time and effort if used. Arrangements were undertaken to adopt these methods and to put them in motion with as little delay as possible. Arrangements at the same time were made with a member of the Chicago Commission's staff, a resident of Hawaii, to return to Hawaii to conduct the survey.

A review of the objectives behind the mainland hospital surveying revealed a two-fold purpose:

(1) an attempt to obtain a national census of hospitals and public health center facilities; to appraise the capacity for service of present facilities; to determine the need for additional

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1/ Survey of Honolulu Hospitals. Lucius W. Johnson and Robert H. Onstott. Hawaii Medical Journal, November 1944.

A Study of Tuberculosis Hospital Requirements in the City & County of Honolulu. Ruth Coogan, Chamber of Commerce of Honolulu, June, 1945.

A Study of the Need for an Open Community Hospital in Wahiawa. Ruth Coogan, Chamber of Commerce of Honolulu, Dec. 1945.

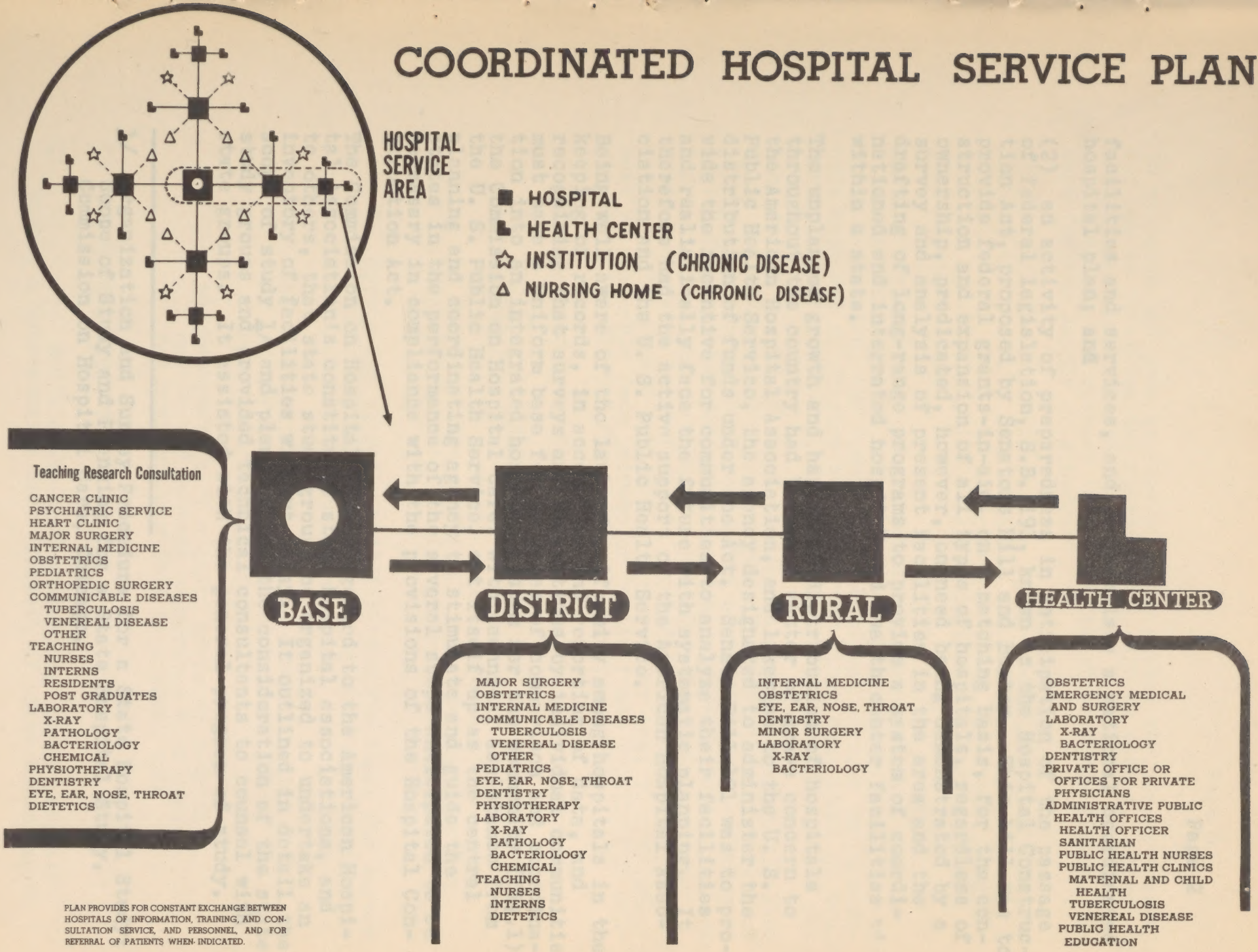

FIGURE 1—A diagram showing relationships among base, district, and rural hospitals and health centers in a coordinated service plan.

facilities and services, and to formulate a national coordinated hospital plan; and

(2) an activity of preparedness in anticipation of the passage of federal legislation, S.B. 191, known as the Hospital Construction Act, proposed by Senators Hill and Burton. This bill was to provide federal grants-in-aid, on a matching basis, for the construction and expansion of all types of hospitals, regardless of ownership, predicated, however, on need being demonstrated by a survey and analysis of present facilities in the area and the drafting of long-range programs to provide a system of coordinationed and integrated hospital and health center facilities within a state.

The unplanned growth and haphazard distribution of hospitals throughout the country had become a matter of grave concern to the American Hospital Association, and likewise to the U. S. Public Health Service, the agency designated to administer the distribution of funds under the Act. Senate Bill 191 was to provide the incentive for communities to analyze their facilities and realistically face the future with systematic planning. It therefore had the active support of the American Hospital Association and the U. S. Public Health Service.

Being well aware of the lack of uniformity among hospitals in the keeping of records, in accounting and reporting of data, and recognizing that surveys and evaluations by individual communities must have a uniform base for purposes of comparison and coordination into an integrated hospital system for the community (fig.1), the Commission on Hospital Care, with technical assistance from the U. S. Public Health Service, set itself up as the central planning and coordinating agency to stimulate and guide the states in the performance of the several steps anticipated to be necessary in compliance with the provisions of the Hospital Construction Act.

The Commission on Hospital Care suggested to the American Hospital Association's constituent state hospital associations, and to others, that state study groups be organized to undertake an inventory of facilities without delay. It outlined in detail the scope of study 1/ and planning for the consideration of the state study groups and provided technical consultants to counsel with state groups. It assisted with the general program of study.

1/ Organization and Survey Procedure for a State Hospital Study; Scope of Study and Planning for a State Hospital Study. Commission on Hospital Care, Chicago.

It prepared and made available to the states the survey schedules for use in obtaining information in a uniform manner, and set up central machinery for the processing and tabulation of the data so collected, all without charge to the state study groups, except for the supply of schedules.

At the time the Hospital Service Study Commission of Hawaii entered the picture, 40 states had taken action toward making a hospital study under the leadership, within the state, of its hospital association, its health department or a special appointed commission.

Since no other agency in the Territory had undertaken such a study and it suited so well the purposes of the Hospital Service Study Commission, the Commission sought and secured the Governor's approval to proceed with a survey along such lines as would serve the purposes of S. B. 191 as well as Joint Resolution #12.

Late in the course of the Commission's study, on August 13, 1946, S. B. 191 was enacted into law 1/. The Territory by reason of it may participate to the extent of $1,125,000 over a five-year period for construction and expansion costs and $10,000 for making a study of and planning for needed facilities on a long-range integrated "master plan". In both instances the appropriation must be matched by local money, two for one; i.e. $2,250,000 must be available from private or public funds locally for construction and $20,000 for the study and planning.

The program under the Act can be divided into four phases:

1. Enabling legislation should be proposed to the state legislature to permit acceptance of federal funds, and to set up a single administrative-fiscal agency to carry out the survey, planning and construction program. A model act for guidance to states is available. 2/

2. Survey and planning. Application for funds for survey and planning must be approved by the Surgeon General. Such approval is contingent upon

   a) designation of a single administrative agency to conduct the survey and planning and make reports, and

   b) designation of a state advisory council made up of members conversant with needs for hospital services to consult with

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1/ Public Law 725. 79th congress.

2/ Model enabling Legislation. State Hospital Survey & Construction Act. Council of State Governments.

and advise the state administrative agency, and

c) making an inventory and survey of existing and needed hospital and related facilities and for developing a state plan for construction.

3. Construction Program. When a state has complied with the conditions under #2 above and has its state plan approved by the Surgeon General, application for each project under the approved state plan must be submitted to the surgeon general through the state agency. Such application must set forth:

a) description of site and reasonable assurance as to its title,

b) building plans and specifications demonstrating compliance with federally approved standards,

c) assurance of adequate financing for construction and operation of completed hospital.

d) reasonable assurance of the payment of prevailing wages for construction work.

4. Hearings and appeal. In case of disapproval of application the law provides for hearings of the state agency before the Surgeon General and appeal to the U. S. Circuit Court.

The Hospital Service Study Commission, having only a limited purpose and tenure, in line with the procedure outlined in the Act, recommended to the Governor that upon completion of the inventorying stage, an agency be designated as the official administrative-fiscal agency to conduct what further survey work is indicated before developing a state plan and to perform such other services as are outlined under the Act. The Governor, on September 23, 1946, designated the Territorial Board of Health as the single administrative agency for this purpose and appointed, on January 14, 1947, the Advisory Council, made up of the following members, to consult with and advise the Board of Health in this program:

Charles F. Honeywell, Chairman

Vergil F. Bradfield
Reginald Carter
Margaret Catton
Dr. Robert B. Faus
Gerald Fisher
Dr. Nils P. Larsen
Miss Rhoda V. Lewis
Kenneth W. Roehrig
Bishop James J. Sweeney
Charles Wright

With the writing of this report, which will cover the collection of the data from the hospitals, tabulation and analysis of some of the data, the Commission considers the inventorying stage completed and will turn over to the Board of Health for use in the succeeding phases of the program all data at hand.

The presentation of this report marks the beginning of a broad program of study and planning for hospital care in Hawaii. It is hoped that the findings and indications presented shall provoke the individuals and groups responsible for hospital care to a community attitude in planning the replacement or extension of facilities.

CHAPTER II - SCOPE AND METHOD OF SURVEY

A. HOSPITALS

TYPE OF HOSPITALS. The survey embraces every hospital, nursing home and institution in the Territory of whatever type and ownership, (except the federally owned hospitals of the Army and Navy), that provides in-bed hospital and nursing services. Institutions and homes found to be providing strictly domicilliary care, such as homes for children and old people where care is restricted to housing and board and where no nursing care is provided, are not included. Likewise were excluded from this inventory institutions which provide service to restricted groups of beneficiaries such as school, boarding home and prison infirmaries.

Thus are covered: general hospitals, maternity hospitals and homes, children and orthopedic hospitals, convalescent and chronic hospitals and homes; tuberculosis hospitals, nervous and mental hospitals and leprosy hospitals.

For ease of discussion, wherever the term "hospital" is used throughtout this report it shall be understood as an all-inclusive term including nursing homes and institutions as well, unless specifically indicated otherwise.

SIZE OF HOSPITALS. The survey covers hospitals ranging in size from 4 beds to 1150 beds.

OWNERSHIP OF HOSPITALS. The survey covers hospitals of all types of ownership: individually owned, corporation owned (which in all cases in the Territory is plantation owned) non-profit, government owned, both county and territory.

At the outset there was some protest against recognizing within the scope of the survey some of the small 4, 6 and 8 bed hospitals which are mostly under individual proprietorship, but the procedure set up nationally put emphasis particularly on the need for locating and inventorying this class of service. These hospitals provide a sizeable amount of service in some areas of the country and present distinctive problems. Contacts with them here have revealed circumstances which will merit attention in future planning. This will be touched upon in a more appropriate section of the report.

PERIOD COVERED. The survey covers data for the year 1945, or for the fiscal year 1945-46 for those institutions which keep their records on a basis other than the calendar year.

SCHEDULES OF INFORMATION. The collection of data was accomplished by means of two types of hospital schedules of information:

(1) a 40-page schedule[1/] for hospitals known to have 25 beds or more. This schedule called for data as follows:

General Data: Name, Location, establishment, ownership or control, type, accreditations, approvals, memberships, management, auxiliary organizations.

Area Served: Map of area served, restrictions of service, geographic distribution of patients.

Physical Plant: Physical structure, bed complement, normal bed capacity, bed allotments, area distribution, living quarters, educational facilities.

Patient Service Data: Summary of services rendered, patient days, autopsies, services by pay-status, type of service, newborn, percent occupancy, length of stay.

Medical Staff: Organization, type, appointment, meetings, membership, departments, qualifications.

Administration: Departmental functions; number, qualifications of personnel; departmental organization and extent of service.

Financial Data: Balance sheet; funds expended and available for land, building and equipment; operating and non-operating income; operating and non-operating expenses; non-hospital services; expenditures from special purpose funds; recapitulation; analysis of operating expense.

Educational Activities: Physicians, interns, residents, nurses, dietitians, laboratory and x-ray technicians, apprentice pharmacists, hospital personnel, public.

Research Activities: Funds, facilities, personnel, clinical investigation, publications.

(2) a 9-page schedule [2/] for hospitals of less than 25 beds. Calling essentially for the same data outlined above for the larger schedule as to area served, physical plant and patient data, but requiring only a minimum of data on departmental functions, personnel, administration and finance in recognition of

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1/ Hospital Schedules of Information. Commission on Hospital Care, Chicago.

2/ Short form Hospital Schedules of Information, Commission on Hospital Care, Chicago.

the simpler operating structure of hospitals of less than 25 beds.

Schedules were mailed to each hospital with the request that as much information as possible be filled in and the schedules held for a visit from the director of the survey. At that time the data was reviewed with the hospital superintendent, or person assigned to the task, and attempts made to supply missing data from hospital records and questioning.

No resistance was encountered anywhere in filling out the schedules, and in many instances the hospital administration put in many hours with and without the survey director in an effort to complete every detail, oftimes using after-hour and holiday time for that purpose.

With the exception of Molokai and Lanai, the survey director visited every hospital in the Territory and has a personal knowledge of the physical plant and the administration.

All schedules upon return to the Commission were carefully edited and the necessary calculations made. Attempts were made to secure any pertinent missing data by correspondence, or by a return visit where such was possible. Copies of the schedule in final form were typed: one copy was returned to the hospital for its record and use, one copy was sent to the Commission on Hospital Care in Chicago for punch card processing and tabulation, and a work copy was retained by the Commission.

The entire set of schedules went forward to Chicago the early part of December and a listing of the data from the schedules was received the end of January.

There will follow later from Chicago punch cards covering the schedule data and a set of ten tables compiled from the schedule data as follows:

Table 1. Bed Complement by ownership, type of hospital and size.
Table 2. Normal Bed Capacity, by ownership, type of hospital and size.
Table 3. Beds allotted to Specific Services.
Table 4. Admissions, patients treated, patient days, average census, births, deaths, autopsies and outpatient visits.
Table 5. Patients discharged from hospitals, by type of service.
Table 6. Days of Care in hospital by type of service.
Table 7. Chronic Patients in General Hospitals.
Table 8. Distribution of Personnel in Hospitals
Table 9. Income and Expense in Hospitals.
Table 10. Assets and Plant Capital in Hospitals.

These tables, upon receipt, will be made a part of this report also.

Pending receipt of machine tabulations, hand tabulations have been made locally as needed for the sections of this report to follow. It is to be expected that there will be minor variations occurring between the data in the analysis and the final tables to be received from Chicago, but it is not to be expected that these variations will materially influence the picture as it is developed in subsequent chapters.

For guidance of the survey and planning activities, the Commission on Hospital Care developed a set of four State Hospital Study Manuals. 1/ A fifth manual is expected to be prepared by the U. S. Public Health Service setting forth the requirements in compliance with the Hospital Construction Act.

B. HEALTH CENTER FACILITIES

It was originally intended that data be collected also on each health center facility in a manner similar to the collection of data for hospitals. A special schedule had been developed by the Chicago Commission for that purpose 2/.

Procedures for obtaining data on health center facilities were agreed upon between the Territorial Board of Health and the Hospital Service Study Commission, dividing the task between the two agencies. As this phase of the work developed, it became evident that most of the data sought was available for the Territory as a whole but that a great amount of time and effort would be required to break the material down by area in the form called for in the schedules. Before undertaking this, inquiry was made of the Chicago office to see if the data as it existed would be acceptable. The reply, which follows, relieves the Commission and the Board of Health of pursuing this phase of the program any further for the time being.

> "Under present circumstances we believe that you could defer completion of Public Health Department Inventory. The Federal Hospital Council is now preparing rules and regulations governing the administration of Public Law 725. Although these have not been established, preliminary discussions appear to place responsibility for the need of additional Public Health Department facilities in the

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1/ State Hospital Study Manuals:
Book I Study Procedures and Survey Work Material
Book II Coding of Schedule Data.
Book III Tabulation of Schedule Data
Book IV Social and Economic Factors in Hospital Planning.

2/ Health Center Schedule of Information, Commission on Hospital Care, Chicago.

State Health Department making unnecessary a detailed inventory of the facilities by the state hospital planning agency. If this thinking prevails in the approved regulations, it will not be necessary to complete public health department facilities schedules in order to draft a state plan.

"In view of all this public health facility schedules which we have received from the various states are being withheld from tabulation pending final decisions on the matter outlined above."

CHAPTER III - ANALYSIS OF HOSPITAL SURVEY DATA

Quantities of studies could be made from the data collected, and no doubt will be made as the study and planning under the Board of Health progresses.

This report will confine itself to data analyzed for the purposes of the Hospital Service Study Commission and some basic considerations of hospital bed distribution, utilization and costs. It will treat these factors for the Territory as a whole, and separately for each Island.

A. TOTAL TERRITORY

1. Distribution of hospitals and beds, and application of standards.

(a) BY TYPE OF HOSPITAL.

After eliminating facilities which do not fit into the definition of a hospital and adding others which ordinarily are not thought of as hospitals but which are included in the procedures for survey set up nationally, we report a total of 61 hospitals in the Territory 1/. Of these, 40 are general hospitals, 3 are maternity hospitals, including, besides Kapiolani, 2 small individually owned hospitals; one children's hospital, one orthopedic hospital; we have one convalescent and chronic hospital and 7 nursing homes; 4 tuberculosis hospitals, one on each island, one mental and nervous hospital; one institution for the mentally deficient, and two leprosy hospitals.

Slightly more than half of the total 5722 beds in use in the Territory's hospitals are in tuberculosis, mental and leprosy hospitals; 4.9 are convalescent and chronic beds, and the rest, 42.3, are in general and so-called "allied special" or "related" hospitals.

1/ Code list of hospitals included in survey. Exhibit 3.

TABLE I. NUMBER OF HOSPITALS AND BEDS, BY TYPE OF HOSPITAL - 1946 TERRITORY OF HAWAII

TYPE	Hospitals		Beds			
			Number		Percent of Total	
	No.	Percent of Total	Normal*	Complement**	Normal	Complement
All Hospitals	61	100.0	5444	5722	100.0	100.0
General	40	65.6	2212	2177	40.6	38.0
Allied special	5	8.2	245	245	4.5	4.3
Chronic and Conv.	8	13.1	166	280	3.0	4.9
Tuberculosis	4	6.6	1048	1027	19.3	17.9
Nervous & Mental and mental defective	2	3.3	1648	1868	30.3	32.6
Leprosy	2	3.3	125	125	2.3	2.2

* "Normal" is used to denote the number of beds for which the institution was built, or the number of beds which normally should be in use on a floor space area of 80 square feet.

**"Complement" is used to denote the number of beds which were actually set up and in use in the survey period.

Are these hospitals adequate for the needs of the people of the Territory? How can one judge whether the Territory has the proper type of hospitals and the right number of beds? Time and time again hospitals have come before the public with claims of overcrowding, or need for more beds, and where action was taken to supply more beds it was usually within the field where the acute need was demonstrated, but seldom is there evidence of an appraisal at the same time of the conditions in related fields.

Yardsticks by which a community can roughly measure whether it has adequate hospital facilities do exist in the form of a ratio of the number of hospital beds to 1,000 persons, and can be applied to various types of hospitals and beds.

General and Allied Special Hospital Beds.

"General hospitals" are the institutions usually referred to by the public when the word "hospital" is used. They are known as general hospitals because admissions to them are not limited to special types of illness.

"Allied Special hospitals" or "related hospitals" are those which limit admissions for one reason or another to certain types of cases. They are allied to the general hospital because the types of patient admitted to them are usually admitted to general hospitals.

Since in the Territory there are only 5 allied special hospitals, constituting a very small number of the total beds, 4.3 percent, it would have been difficult to treat them separately for the purpose of analysis. In the following discussions therefore they have been included with the general hospitals. The fact that these five allied special hospitals all appear on the Island of Oahu and cases so hospitalized on the Island of Oahu are handled in general hospitals on the other islands was a further factor against separate treatment.

The ratios of beds in general and allied special hospitals to population for the Territory as a whole, and by counties and the principle cities of Honolulu and Hilo, are as follows:

TABLE II. Ratio Beds to Population. General and Allied Special Hospitals.

Territory of Hawaii, 1946.

	Bed Complement 1946	Population* July 1, 1946	Ratio per 1000 population
Total Territory	2422	519,503	4.7
Hawaii County	589	70,871	8.3
Hilo City	250	27,922	9.0
Hawaii, excl. of Hilo	339	42,949	7.9
Honolulu County	1215	358,911	3.4
Honolulu City	897	267,710	3.4
Honolulu Co., excl. of City	318	91,201	3.5
Kauai County	167	35,111	4.8
Maui County	451	54,225	8.3
Island of Maui	378	45,337	8.3
Island of Lanai	26	3,630	7.2
Island of Molokai, excl. of Kalaupapa	47	5,258	8.9

* Revised civilian population estimates., Territorial Board of Health, October 28, 1946.

The standard that is accepted generally for general hospital beds is 4.5 per 1000 population. For continental United States in 1940 there were 3.5 beds. However, the range varies widely according to the geographic areas:

New England	4.8
Middle Atlantic	4.4
Mountain	4.3
Pacific	4.3
East North Central	3.6
West North Central	3.5
South Atlantic	2.8
West South Central	2.3
East South Central	1.8

Within the areas the differences are also very marked. Thus, among the more populous and wealthy states, Massachusetts had 5.5 beds, California 4.5, and Michigan 4.4. At the other extreme were Alabama with 1.8, Arkansas with 1.7 and Mississippi with 1.6. The distribution of these facilities conforms to the pattern of high or low purchasing power.

By comparison, then, the survey figures for Hawaii show that, taken as a whole, the Territory compares very favorably with the states in its ratio of 4.7 general and related beds per 1000 population. This all-over figure, however, as Table II shows, hides a shortage of beds in Honolulu and the rest of Oahu (3.4 and 3.5 respectively); indicates a little better than standard for Kauai with 4.8; and reveals a surprising overage of beds on all the other islands: Hawaii ratio 8.3, Maui 8.3, Lanai 7.2 and Molokai 8.9.

Attention should be called to the fact that in those areas where there is an excess of beds, the ratio is strictly on general hospital beds, since no allied special hospitals exist in those areas, whereas the ratio for Honolulu remains low even with the inclusion of the allied special beds which strictly speaking should not have been included in determining the ratio. Eliminating the 245 allied special beds, the ratio for the City of Honolulu's 652 general beds is 2.4; for the Island of Oahu the ratio is 2.7 and for the Territory as a whole 4.2.

Relating the plantation hospital beds to the plantation population, it is found that there is an abundance of beds far exceeding the standards, except again on the Island of Kauai.

Table III. Ratio Plantation Hospital Beds to Plantation Population, Territory of Hawaii - 1946

	Bed Complement	Plantation Population*	Ratio
Total	783	77,214	9.9
Island of Hawaii	226	25,828	9.0
Island of Oahu	204	18,287	11.2
Island of Kauai	64	13,807	4.6
Island of Maui	244	15,671	15.6
Island of Lanai	26	3,630	7.2
Island of Molokai	19		-

*Census of Hawaiian Sugar Plantations, HSPA, June 30, 1945

These plantation hospitals, however, do not confine their services to the plantation population alone, except on the Island of Lanai. Exhibit #4 showing who paid for hospitalization of patients, discharged will give some indication of the proportion of patients in plantation hospitals who paid their own way, were paid for by government and who received their services at plantation expense.

These ratios of plantation hospital beds to plantation population were thought significant to point up so that they may be given consideration as the development of this report proceeds.

Convalescent & Chronic Hospital Beds.

Ratios may be applied, in the same way, for chronic and convalescent hospitals. Here the standard is 2 beds per 1000 population. The Territory has one-half bed in convalescent and chronic hospitals per 1000 population.

There are two types of patients involved here. The convalescent who has passed the destructive and acute phases of an illness or injury and is no longer in need of intensive medical and nursing care. This patient may need to be retained for supervision or rehabilitation for a shorter or longer period of time and could be cared for in a specialized institution or home better suited to his needs and at less expense than in the general hospital.

The chronic patient presents another picture. As the average age of our population continues to advance, the morbidity of the degenerative diseases steadily rises. There is a growing demand for institutional care of patients afflicted with so-called chronic or long-term illnesses. The type and quality of care required by these patients differs little from that needed by the patient afflicted with an acute illness. The primary variation between them lies in the amount of special services they require and their average length of stay.

Facilities maintained specifically for convalescent and chronic patients in the Territory were found to be as follows:

Table IV. Convalescent and Chronic Hospitals
Territory of Hawaii - 1946

Bed Complement	
4	McBryde Sugar Co. Unit, Eleele, Kauai
40	Private nursing homes, Honolulu
52	Hospital unit, Palolo Chinese Home
4	Salvation Army Women's Home for obstetrical convalescents
176	Maluhia Home, C & C of Honolulu
280	Total Beds in Chronic and Convalescent Hospitals.

Maluhia Home has a floor space which, according to standards, should be supporting 62 beds, but has managed to carry consistently throughout the year under survey almost three times that load, utilizing every available inch of lanai space and overcrowding seriously.

If the ratio were to be accepted on the basis of normal bed capacity, that is, figuring Maluhia as having 62 beds instead of 176, then the ratio of beds in convalescent and chronic hospitals for the Territory would be one-third bed per 1000 population.

The survey records an average of 200 patients daily in general hospitals "occupying accommodations intended for the acutely ill, who are convalescent, chronic, custodial, incurable or other types of patients whose residence in the hospital is of long duration and who might more suitably be cared for in other institutions, if such facilities are available", where care is less costly.

Most of the patients so reported are chronics and well advanced in age. Many of the patients in this class are bed-fast over many years and very little hope for improvement is looked for; only a small number are patients of prolonged convalescent status who eventually will return to the community. So that a large number of these patients may be expected to require nursing care for the remainder of their lives.

Some of these are in plantation hospitals at the expense of the plantation or the Department of Public Welfare. In most hospitalized cases the Department of Public Welfare pays for the care of these patients at the same monthly rate, roughly from $24 to $35, that it pays to private nursing homes. There are instances, however, where the full per diem hospital rate is paid. One hospital gets $5.50 per day for the 14 such patients currently in the hospital, who have been there over extended periods of many months.

The survey further records that there are approximately 150 (the figure has since been changed to 200) patients in the Territorial Hospital "who are 65 years of age or older and who are senile and deteriorated. In the main these patients show defects of orientation and memory and a general decline of their intellectual faculties. They are purely custodial cases requiring nursing care and supervision and could very well be taken care of in a non-psychiatric institution equipped and staffed to handle such cases."

A summary of cases reported in the hospital schedules is as follows:

Table V. Daily average census of Convalescent and Chronic Patients in Hospitals.* Territory of Hawaii, 1946

Type of Hospital	No. hospitals reporting on this question	No. hospitals reporting conv. & chronic patients.	Daily average number of conv. and chronic patients.
General			
Non-profit	7	4	54
proprietary	16	10	93
government	6	5	53
Nervous & Mental	1	1	150**
Total	30	20	350

* Does not include patients in convalescent and chronic hospitals and nursing homes, or such patients in hospitals under 25 beds from whom information on this question was not solicited.

** This figure has been increased by 50, according to more recent statement of the Director of Institutions.

Adding Maluhia's 176 daily average, the 100 scattered beds in private nursing homes, etc., the 200 daily average in the general hospitals, and the 200 daily average in the Territorial Hospital, gives an absolute minimum of 680 daily average of chronic and convalescent patients or fully two-thirds of the 1000 convalescent and chronic beds that the Territory should have according to standards. These, it will be remembered are already hospitalized, the patients in the community who have not been able to find necessary accommodations are not included.

While the number reported in the table above is an indication of the need in this category, it must be understood that the figures quoted were obtained in response to only one question in the schedule and that question called for the "approximate daily average". The number of patients thus reported was on the basis of impression rather than record. It is doubtful whether hospitals could have produced records on this subject for the year, but if records were asked to be kept for a year it may be expected that the number will be greater rather than less.

No attempt was made in this survey to canvass the community for the number of persons who would avail themselves of convalescent and chronic hospital or nursing home facilities if such were available, but several such surveys have been made in the recent past.

Initiated by the Kauai County Medical Society, the staff of the Department of Public Welfare conducted and reported on a survey made in June 1945 to "Determine Need of Home for Aged and Convalescent in Kauai County." The conclusions on need were as follows:

> "It seems to us that from this survey the need of a home to care for the aged and convalescents is evident.
>
> "Of the 31 persons known to be patients in a hospital or dispensary all can be placed in a home for convalescent care should one be established. The lack of community resources for such convalescent care has prevented these patients from being discharged.
>
> "There is another group of 28 persons, all men, who are not in a hospital or dispensary and who have expressed interest in entering a home for the aged and convalescent. Sixteen are for the care of the aged and 12 are for the care of convalescents. Except for a few, these are all aged who are scarcely able to maintain themselves physically due to poor health of one kind or another." 1/

1/ Survey to Determine Need of Home for Aged and Convalescent in Kauai County. Dept. of Public Welfare, Kauai County. June, 1945. p. 10

In 1943 the Honolulu County Medical Society 1/ made a survey of its members to ascertain the number of patients in hospitals who might be accommodated in a convalescent-nursing home if one existed. The following is quoted from replies received from 76 doctors:

> "596 patients admitted to hospitals during the year could have been discharged earlier, if a suitable convalescent-nursing home had existed;
>
> "40 such patients could have been currently discharged;
>
> "23 chronically ill patients were being attended at home by special nurses who might otherwise have been working in hospitals where there existed an acute shortage of nurses". 2/

In trying to inventory the facilities for convalescent and chronic patients the difficulties involved in separating the facilities for chronic care from those for the care of the aged became increasingly more obvious. Many of the patients receiving nursing-home care, or those recorded as institutionalized at the Territorial Hospital, require varying degrees of attendance and care not because of acute or specific illness but because of deterioriation and failing faculties of old age, making it difficult to draw a line between the care of the chronic patient and the care of the aged.

Thus it seemed advisable in arriving at an inventory of chronic beds to visit nursing homes and institutions known to care for convalescent, chronics and aged and on the basis of information received from the proprietor or director include or exclude the institution from the survey.

Several small proprietary nursing homes thus canvassed, while catering in large measure to old persons, nevertheless gave evidence of providing daily nursing care to bed patients and thus were included. Several homes for the aged were found to provide strictly domiciliary care, in fact refusing to accept or keep any but ambulatory patients. They were excluded from the survey. One large home for the aged was found to have a hospital section for the segregation of acutely ill and chronic bed patients. In this instance, the hospital section was included in the inventory.

1/ Report of Dr. N. M. Benyas, President, Honolulu County Medical Society, County Society Reports. Hawaii Medical Journal, May 1944. P. 253.

2/ The Question of a Convalescent-Nursing Home. Margaret M. L. Catton, Hawaii Medical Journal, Jan-Feb., 1944. p. 141.

Mental Hospital Beds

The Territorial Hospital, the only mental hospital in the Territory, serves the entire population with 1150 beds. This constitutes a ratio of 2.2 beds per 1000 population, whereas the standard is 5 per 1000 - less than half the standard.

Further reducing the number of beds available to the mentally ill, is the occupancy, as pointed out elsewhere, of 200 beds in that institution by patients who could well be cared for in a non-psychiatric institution if accommodation elsewhere were available.

Excluded, by definition, from consideration in arriving at the Territory's ratio for mental beds are:

718 beds for the mentally defective provided at Waimano Home;

25 beds in the Psychiatric Unit at Queens Hospital for short-term treatment of psychiatric patients, and

10 beds in three hospitals on the islands of Maui and Hawaii for patients awaiting transfer to Queen's Psychiatric Unit or the Territorial Hospital.

2 beds in the Hospital unit of Kalaupapa Settlement.

No ratio is available to judge the adequacy of the number of beds for the mentally defective.

Tuberculosis Hospital Beds.

The Territory has four tuberculosis hospitals, one on each island: Leahi Hospital on Oahu 485 beds; Kula Sanatorium on Maui 202 beds; Samuel Mahelona Hospital on Kauai 115 beds and Puumaile Hospital on Hawaii 225 beds. A total of 1027 beds.

Also during the year 1945 the Wahiawa Hospital provided 68 beds for tuberculosis patients as an overflow of patients from Leahi. The patients so accommodated, however, are being transferred at the time of writing this report, to a new Waimano unit of Leahi Hospital located in the Pearl Harbor area, planned to accommodate the less acute and ambulatory tuberculosis patients. This unit is starting with 125 patients, expects to accommodate 330 patients comfortably and has a maximum capacity of 380. It is a temporary expedient pending construction of 240 additional beds at Leahi Hospital.

None of the general or other hospitals reported special facilities for tuberculosis patients. Presumably when diagnosis of tuberculosis is made on general hospital patients, they are transferred to the tuberculosis hospitals.

The Territorial Mental Hospital reports a special unit to accommodate mental patients also suffering from tuberculosis. Thirty beds were set aside for that purpose during 1945-1946.

The hospital unit at Kalaupapa Leprosy Settlement reports 24 beds for tuberculosis patients and 25 additional beds in the settlement outside the hospital unit.

The accepted ratio for beds in tuberculosis hospitals is on the basis of beds per annual deaths from tuberculosis, or on a five-year average of annual deaths from tuberculosis. Applying the first standard, and taking in only the 1027 beds in the four tuberculosis hospitals (excluding the beds at Wahiawa, the Territorial Hospital and Kalaupapa), with 281 deaths during the year 1945-1946, the Territory actually has a markedly greater ratio, 3.65, than the standard of 2.50 calls for. On the five-year average basis of 275 deaths, the ratio is 3.73. If the 68 beds at Wahiawa, the 30 beds at the Territorial Hospital and the 49 at Kalaupapa are included, making a total of 1174 beds, the ratio is advanced to 4.17 or 4.27 depending on whether based on annual deaths or a five-year average of deaths.

Island by island the ratios are noteworthy:

Table VI. Ratio Tuberculosis Hospital Beds per annual death from Tuberculosis. 1945 - 1946

Island	Number Tbc beds	Deaths* from tbc. 1945-1946	Ratio	
Oahu	485	174	2.79	3.17 (Wahiawa 68 beds added).
Hawaii	225	52	4.32	
Kauai	115	30	3.83	
Maui	202	25	8.08	
Total	1027	281	3.65	4.17 (Wahiawa, Terr. Hospital and Kalaupapa beds included. 147)

*Bureau of Vital Statistics, Territorial Board of Health.

Entering into any consideration of the adequacy of number of beds for tuberculosis patients is the number of patients waiting to enter the tuberculosis hospitals. On June 6, 1946 there were estimated to be 146 such patients on Oahu. 1/ The following record, showing length of time tuberculosis patients waited to be hospitalized on the Island of Oahu during the one year period July 1, 1945 to June 30th, 1946, was available:

Table VII. Number of tuberculosis patients on hospital waiting list by length of waiting period. Island of Oahu. 1945-1946 1/

Waiting period	Number of patients waiting.
1 to 30 days	187
31 to 60 days	59
61 to 90 days	46
91 and over	114
No time given	16
On current list	146
Total	568

No data on waiting lists is at hand for the other islands. This subject was not explored by the survey.

Leprosy Hospital Beds

There are two institutions for the hospitalization of leprosy patients: the Kalihi Hospital in Honolulu which is the receiving station for leprosy cases from all islands with 63 beds; and the 62 bed hospital unit for the Leper Settlement at Kalaupapa, Kalawao County, Island of Molokai. The Settlement itself accommodates some 400 persons with crowding but they are not all hospital cases.

At the Kalaupapa hospital unit there are 24 beds set aside for tuberculosis patients and 25 additional beds are available in the settlement for such patients. The hospital unit also has 2 beds for mental and nervous patients.

No ratio for comparison of adequacy of number of beds exists for this special type of accommodation.

1/ Report by Robert Perlstein, M. D., Leahi Hospital records.

Summary all types of hospitals.

Throughout this discussion of ratios, the standards used were those tentatively adopted by the U. S. Public Health Service as a guide to states in their planning under the Federal Hospital Construction Act. They are repeated in the summary table below, comparing them with existing ratios in the Territory:

Table VIII. Comparison of Bed Ratios, Territory of Hawaii Against Standards.

Type of Hospital	No. Beds	Territorial Ratio	Tentative USPHS Ratio
General	2177	4.2	4.5 per 1000 pop;
Pediatric & Orthopedic	128		
Maternity	117		
	2422	4.7	
Chronic & Convalescent	280	.5	2.0 per 1000 pop;
Nervous and Mental	1150	2.2	5.0 per 1000 pop;
Tuberculosis	1027 or 1174	3.6 or 4.2	2.5 per annual death

(b) BY SIZE OF HOSPITAL

It will be noted in the table which follows, that 38 of the 45 general and related hospitals have a bed complement of less than 100 beds, which is the line of cleavage drawn to distinguish between a large and small hospital. While for the United States 75 per cent of all general hospitals are under 100-bed capacity 1/, Hawaii has 87.5 percent general hospitals in that class. The survey for the State of Michigan shows 78% under 100 beds 2/.

Combining general and allied special hospitals the percent of hospitals having less than 100 bed capacity in Hawaii is 84.4.

1/ The Small General Hospital, W. S. Rankin. The Hospital in Modern Society. Commonwealth Fund, 1943. p. 55

2/ Hospital Resources and Needs. The Report of the Michigan Hospital Survey, 1946. p. 82, Table 23.

Table IX. Number of Hospitals and Bed Complement by Type and size of hospital. Territory of Hawaii, 1946

	Hospitals		Beds	
Type and Size	Number	Percent	Complement	Percent
All Hospitals	61		5722	
General Hospitals	40	100.0	2177	100.0
under 25 beds	13	32.5	185	8.5
25-49 beds	16	37.5	571	26.2
50-99 beds	6	17.5	471	21.6
100-249 beds	4	10.0	580	26.6
250-499 beds	1	2.5	370	17.0
Allied Special Hospitals	5	100.0	245	100.0
under 25 beds	2	40.0	12	4.9
25- 49 beds	1	20.0	28	11.4
100-249 beds	2	40.0	205	83.7
Conv. & Chronic Hospitals and Nursing Homes.	8	100.0	280	100.0
under 25 beds	6	75.0	52	18.5
50- 99 beds	1	12.5	52	18.5
100-249 beds	1	12.5	176	62.9
Tuberculosis Hospitals	4	100.0	1027	100.0
100-249 beds	3	75.0	542	52.8
250-499 beds	1	25.0	485	47.2
Nervous & Mental and Mental deficient Hospitals	2	100.0	1868	100.0
Over 500 beds	2	100.0	1868	100.0
Leprosy Hospitals	2	100.0	125	100.0
50-99 beds	2	100.0	125	100.0

It is generally recognized that comprehensive hospital service cannot be rendered economically or efficiently in very small hospitals. Conversely, it has been repeatedly stated that very large institutions become unwieldy from both an administrative and a service viewpoint.

It has been indicated that hospitals with less than 50 bed capacity cannot be economically and efficiently operated. The administrative or supervisory positions essential in all hospitals, i.e., administrator, director of nursing, dietician, housekeeper, accountant, engineer, medical record clerk, laboratory technician, operating room nurse, et cetera, constitute a disproportionate

cost to other operating expense if separate personnel for such supervisory positions is provided. If several of these positions are combined, as is the case in the smaller hospitals of Hawaii, it often results in burdening professional personnel with tasks that detract from efficiency in their professional capacity.

When an institution becomes too large, the administrative procedures and the service may become too impersonal and cumbersome, and this will be reflected in the quality of care given the patient. When the specialized professional departments become too large, various handicaps to prompt service may develop or duplication of costly equipment may become necessary. In large institutions it is difficult to conduct the service as an integral unit.

Further data on size of hospital is contained in the following section where it is discussed in relation to ownership.

(c) BY OWNERSHIP OF HOSPITAL

Table X. Number of Hospitals - Bed Complement by Ownership and Size. All Hospitals. Territory of Hawaii, 1946

Ownership	No. Hosp. in Group	Total	Per-cent	Bed Complement						
				-25	25-49	50-99	100-249	250-499	Over 500	Av. beds in groups
Non-profit	12	1662	29.0	4	56	145	602	855	....	139
Proprietary										
Individual	14	160	2.8	134	26	...	...	...	....	11
Corporation	21	783	13.7	89	398	296	...	...	....	37
Government										
City & Co.	10	1124	19.7	22	119	82	901	...	....	125
Territory	4	1993	34.8	...	...	125	...	...	1868	495
Total	61	5722	100.	249	599	648	1503	855	1868	...

The 12 non-profit hospitals are with one exception all general and related hospitals. They operate chiefly on income from the care of patients and endowed funds. In recent years the high cost of operation has necessitated supplementary funds from the Territorial government. The one non-profit hospital not in a general hospital is Leahi Hospital, with a non-governmental Board of Directors, but supported largely by Territorial government funds for operations. The non-profit hospitals include also the church hospitals.

The proprietary hospitals fall into two classes:

(1) Those operated by the plantations and designated as

"proprietary corporation-owned", with the plantation physician acting as hospital superintendent or director. There are 21 of these throughout the Territory, all of them in the small hospital class being under 100 beds: 6 have less than 25 beds, 11 are 25-50 beds, and 4 have 50-100 beds, with the largest having 97 beds.

(2) Those owned by individual doctors and others, including nursing homes as well as hospitals. The 14 in this group constitute a very small percentage of the total beds in the Territory: only 2.8 percent. Except for one hospital of 26 beds, all are under 25 beds; 8 operate less than 10 beds.

The hospitals in this group, without exception, are operated by Japanese doctors as a necessary adjunct to their private practice because in most instances access to the hospital in their locality is denied them. While some of these doctors are of the opinion that the older Japanese patients prefer to be hospitalized under conditions where they can make themselves understood in their own language and enjoy a Japanese diet, they were not too enthusiastic about maintaining these separate small establishments and perpetuating their own professional isolation.

Only two hospitals in this class demonstrated a sizeable profit for the year. In most cases the income from hospital services could not be separated from private practice income but there was little indication that the arrangement was overly prosperous.

Comment should be made here that the number of beds reported for some of the hospitals maintained by Japanese physicians will be at variance with numbers reported in the A.M.A. and A.H.A. directories. A custom is prevalent in these hospitals of providing a bed for the overnight stay of relatives of patients. Such beds were eliminated from the count of beds for the purposes of this survey.

The four nursing homes in this group are operated by retired nurses or practical nurses. None of them are profit-making enterprises; for the most part they provide a living for the operator and her family.

In the class of hospitals operated by the county governments, 3 are the tuberculosis hospitals, Puumaile, Kula and Mahelona; one is Maluhia Home for convalescents and chronics; the remaining 6 are general hospitals operated by Boards of Supervisors or special boards appointed by them:

Malulani, Hana and Kula General on the Island of Maui;
Hilo Memorial, Kohala and Kona on the Island of Hawaii.

These hospitals each have a considerable income from pay patients, but their operation is assured by government subsidy. No county-

supported general hospitals exist on Oahu, Kauai, Molokai and Lanai.

The four hospitals operated by the Territory of Hawaii include the Territorial Mental Hospital, Waimano Home, Kalihi Receiving Station and Kalaupapa.

Separating the general and allied special hospitals from all other types, for consideration by ownership, we have the following:

Table XI. Bed Complement by Ownership and Size of General and Allied Special Hospitals. Territory of Hawaii 1946

Ownership	No. Hospitals in Group	Total	Per-cent	Bed Complement						
				-25	25-49	50-99	100-249	250-499	Over 500	Av. No. Beds
Non profit	9	1121	46.2	...	56	93	602	370	...	124
Proprietary										
Individual	10	116	4.8	90	26	...	...	...	...	12
Corporation	20	779	32.2	85	398	296	...	...	...	39
Government										
City & County	6	406	16.8	22	119	82	183			67
	45	2422	100.0	197	599	471	785	370	...	54

2. Utilization of Hospital Beds

(a) OCCUPANCY RATE.

A second criteria for determining whether there is an adequate number of beds available for the needs of the community is to review the extent to which hospital beds are used.

The number of beds occupied by patients in relation to the total number of beds in a hospital is referred to as the percentage of occupancy or the bed occupancy rate.

This average occupancy of a hospital is established by multiplying the number of beds in daily use by 365 days, thus arriving at the optimum number of patient days the hospital could supply during the year. Dividing the total actual patient days by that figure, the percent of occupancy is arrived at thus:

$$\frac{\text{Total patient days}}{\text{Bed Complement} \times 365} \times 100 = \text{Per cent occupancy.}$$

The average occupancy for the several types of hospitals in the Territory for 1945 was as follows:

Table XII. Average Occupancy Rate, by type of hospital. Territory of Hawaii. 1945 1/

Type of Hospital	Average Occupancy Rate
General	60.8
Allied Special	
Maternity	114.8
Pediatric	80.3
Orthopedic	78.5
Convalescent and Chronic	83.4
Tuberculosis	93.0
Mental & Mental Defective	86.0
Leprosy	47.2

There is no one occupancy rate which can be said to be "normal" for all sizes and all types of hospitals. It is common knowledge that occupancy rates vary according to size and type of hospital. Small hospitals usually have lower occupancy rates than do large hospitals. It has also been observed that long-stay (chronic, nervous and mental and tuberculosis) hospital usually have higher occupancy rates than short-stay (maternity and acute illness) hospitals. Discussion of occupancy by type of hospital is therefore made necessary, and follows.

General Hospitals, and Allied Special Hospitals.

A general hospital should have sufficient beds to meet day-to-day and seasonal variations in demand for care. If a hospital is to serve its community adequately it should neither turn patients away nor should it use room and hall space not constructed for patient use. Yet hospitals cannot be expected to maintain a large number of reserve rooms to meet unpredictable demands which result from epidemics or catastrophes. Ideally, a general hospital should have enough beds so that under normal conditions it would be completely filled on only one or two days during the year.

Because hospitals have been constructed to meet demand, we may expect to find in actual experience some indication of the fundamental relationship between size of hospital and percentage of occupancy.

On the basis of actual experience, the Commission on Hospital Care in Chicago, has set up by formula a device which can be used to estimate the probable variation in daily census of hospitals, indicating the upper and lower limits of occupancy into which hos-

1/ Utilization of Hospitals by Type of Hospital. Full Table. Exhibit 1.
Utilization of General and Allied Special hospital by islands. Full table. Exhibit 2.

pitals of given size tend to fall. In Table XIII a comparison is made between the occupancy rates in the Territory's general hospitals, the actual occupancy rates for the same size groups in A.M.A. registered hospitals in the United States, and the theoretical percentage occupancy as devised by the Commission on Hospital Care 1/.

Table XIII. Average Occupancy Rate in General Hospitals 2/. Comparison between Territory of Hawaii, A.M.A. registered hospitals and theoretical rates, by size of hospitals. 1945.

Hospital Size	Actual percent Occup.		Theoretical Occup.	
	Hawaii 1945	A.M.A. reg. 1945	Percentage Low	High
- 20 beds	33.3	57.7	38.4	45.4
20- 39 beds	42.3	61.8	48.2	55.4
40- 59 beds	34.1	67.9	56.5	63.4
60- 79 beds	60.6	71.1	62.0	68.5
80- 99 beds	51.8	73.1	65.5	71.7
100-139 beds	86.9	76.4	68.9	74.7
140-299 beds	51.5	79.8	73.0	78.3
300-499 beds	89.6	79.2	80.8	84.8
Total	60.8	74.8	71.5	76.6

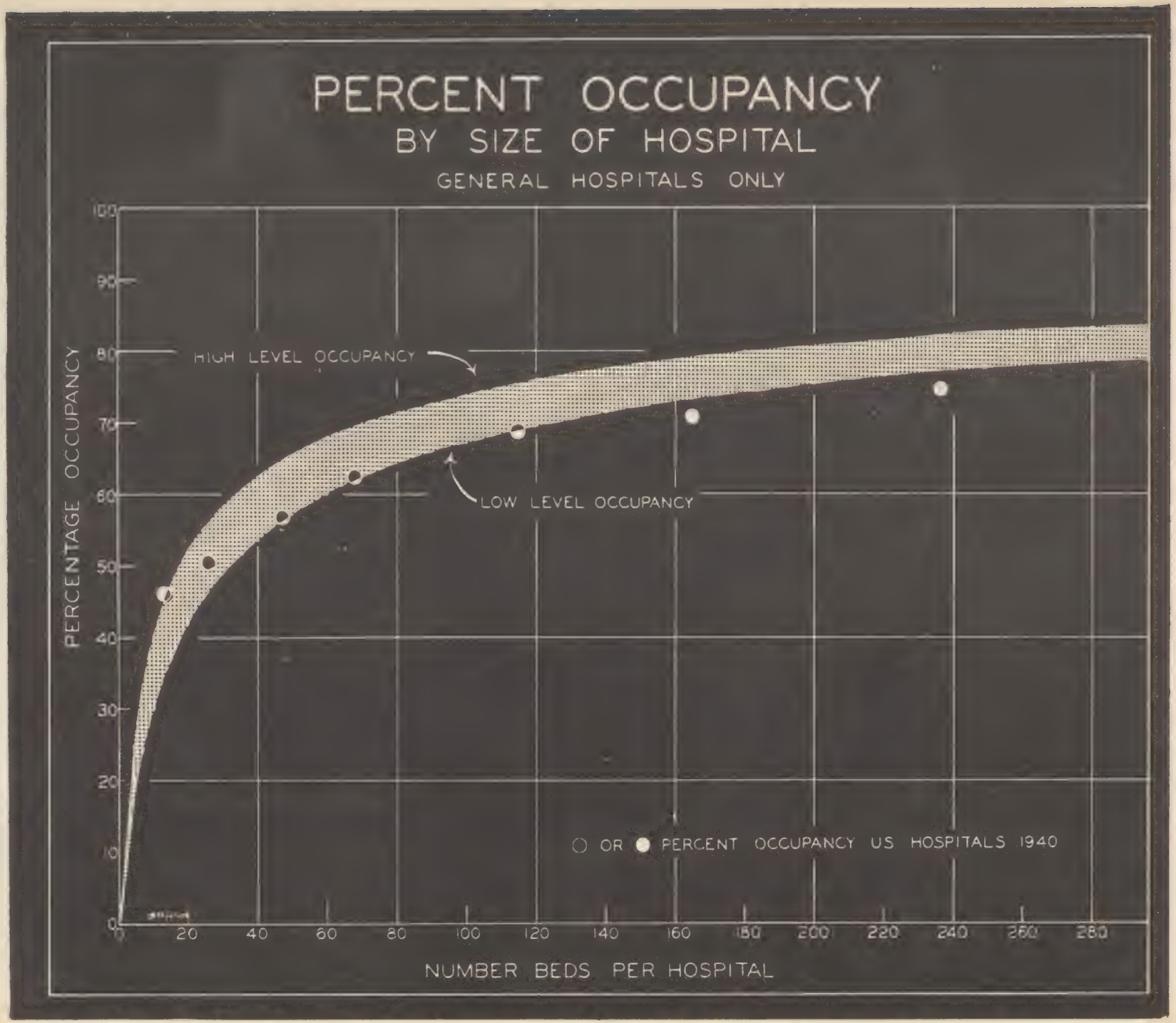
It will be noted that in every size group, except the one for 100-139 beds and the 300-499 group, Hawaii's percent of occupancy for all general hospitals falls not only far below the average occupancy rate for all AMA registered hospitals, and considerably lower than the theoretical "high" rate in column 4 of the table above, but also below the theoretical "low". Occupancy for the size groups 100-139 beds and 300-499 was pulled up by the high occupancy rates of 109.7% for St. Francis and 89.6 for Queen's in 1945, but the 60 and 40 beds opened by these hospitals in 1946 may conceivably bring the occupancy rates for these two size groupings lower for the year 1946.

The indication is that the hospitals of the Territory are not occupied as extensively as is the experience elsewhere. Applying the measuring rod of occupancy confirms the findings in the preceeding chapter on ratio of beds to population that the Territory as a whole is overly supplied with general hospital beds.

The accompanying curve of "Percent Occupancy" by size of hospital may be helpful to visualize how the Territory's hospitals in toto, by size groups, and individually, fit into the pattern.

1/ Bed occupancy rate in general hospitals. Hospital Survey News Letter, June 1946, Commission on Hospital Care.

2/ See Exhibit 3. Code List of Hospitals showing occupancy rate for each hospital.


PERCENT OCCUPANCY
BY SIZE OF HOSPITAL
GENERAL HOSPITALS ONLY
PERCENTAGE OCCUPANCY
100
90
80
70
60
50
40
30
20
10
0
HIGH LEVEL OCCUPANCY
LOW LEVEL OCCUPANCY
○ OR ● PERCENT OCCUPANCY US HOSPITALS 1940
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
NUMBER BEDS PER HOSPITAL

Occupancy, by islands, of general and allied special hospital beds is as follows:

Table XIV. Occupancy rates, general and allied special hospitals by islands. Territory of Hawaii. 1945

	Occupancy Rate
Territory	62.6
Oahu	81.8
Hawaii	43.4
Kauai	52.5
Maui	50.6
Lanai	36.9
Molokai	35.9

The high occupancy falls on the Island of Oahu. The low occupancy rates on the other islands coincides with the corresponding large ratio of beds to population and the fact that almost all hospitals on the outside islands are small ones, being with only one exception under 100 bed capacity. Hilo Memorial is that exception with 183 beds.

The small hospital, because of low occupancy, must necessarily have a high cost per bed if it is to provide high quality hospital care. Overhead costs, such as management, nursing, staff, maintenance, depreciation, etc., continue regardless of the fluctuations in the daily census. Therefore statistics showing low costs in small hospitals with average occupancy rates may be an indication of low quality of care. The "Percent Occupancy" chart shows a rapid decline in the expected occupancy rate as hospitals decrease in size under 100 beds. This fact constitutes a strong argument against the building of small hospitals.

It may be pointed out that the occupancy formula may be used to determine when and to what degree a hospital is overcrowded. If the average daily census is greater than the formula indicates is normal, then the hospital is crowded to that extent. Thus, the formula may serve as a pressure gauge for determining need for hospital expansion.

Separating the allied special hospitals from general hospitals we find a high utilization of our allied special hospitals, as indicated in Table XII. The 114.8% occupancy for maternity hospitals may be expected to drop since Kapiolani Hospital in the year under review was undergoing remodelling. It operated 105 beds in 1946 as against 38 in 1945. The orthopedic hospital with 28 beds and an occupancy rate of 78.5 shows a high occupancy rate

for its size and the pediatric hospital with 72 beds and a rate of 80.3 is also above the upper limit of the theoretical curve. The addition of 28 beds in 1946 to the latter hospital may produce an occupancy more in keeping with the curve.

The occupancy of hospitals by ownership has some significant indications.

Table XV. Occupancy Rates, General Hospitals and Allied Special Hospitals by Ownership and by Islands Territory of Hawaii. 1945

Island	Occupancy Rate				
	All Hospitals.	Non-Profit	Proprietary Individual	Proprietary Corporation.	Government
Territory	62.6	84.7	41.0	47.6	47.3
Oahu	81.8	89.7	49.0	52.6	....
Hawaii	43.4	....	40.6	41.2	46.2
Kauai	52.5	52.8	36.8	53.2	....
Maui	50.6	....	....	51.3	49.3
Lanai	36.9	....	....	36.9	....
Molokai	35.9	47.2	....	19.3	....

Chronic and Convalescent; tuberculosis and mental hospitals

These different categories are discussed together because of the factor common to all of them, i.e., long-term stay. In these institutions a higher occupancy than for general beds is generally conceded to be justifiable since the turnover of patients is small and there are not day-to-day or seasonal fluctuations in the receipt of patients. However, there must be here, as in general hospitals, a certain amount of departmentalization and segregation to provide for the special needs of the surgical patient, for the separation of the far-advanced cases from the mild cases, the ambulatory from the bed-ridden patients, children from adults, males from females.

Convalescent and Chronic Hospitals. The occupancy rate of 83.4 (See Table XII) for our convalescent and chronic hospitals does not reflect the true condition at Maluhia Home which operates 176 of the 280 beds in this classification. For consistency throughout the study the "bed complement" of each hospital was used in the statistics. That, by definition, takes in the actual number of beds in operation. Maluhia, as was pointed out previously has in use about 3 times as many beds as its floor space

should normally accommodate. On the basis of the 62 normal bed capacity, Maluhia is operating at 239% occupancy!

Tuberculosis Hospitals. Collectively the four tuberculosis hospitals of the Territory ran 93% occupied on the average for the year 1945. Individually the average occupancy was as follows:

	Patient days	Beds	Occupancy
Leahi	169,901	485	96.0%
Puumaile	79,115	225	96.3
Mahelona	37,217	115	88.7
Kula	62,152	202	84.0

Leahi Administration considers 90% occupancy as a maximum safe average for Leahi thus providing leeway to accommodate surgical cases received from other hospitals in addition to other segregation. From the standpoint of size all but Kula Sanitorium run way above the theoretical "high" curve of occupancy for general hospitals.

Nervous & Mental, and mental defective institutions. Here again the occupancy rates are high:

	Patient days	Beds	Occupancy
Territorial Hospital	402,089	1150	95.8%
Waimano Home	184,035	718	70.2

As in the case of Maluhia Home, the occupancy rate for the Territorial Hospital is on the basis of the bed complement of 1150 beds. If it were calculated on the basis of 930 beds which the hospital considers its normal capacity the occupancy rate would be 118.4%. By law the Territorial Hospital must accept all patients committed to it, and other hospitals are not equipped to give even temporary relief to this load.

Waimano's occupancy rate indicates a satisfactory rate, presenting a much improved situation over former years. There is also no longer a list of patients awaiting entrance to this institution.

Leprosy Hospitals

Kalihi Receiving Hospital, with 63 beds reported 4,959 patient days, or an occupancy of 21.6%. Kalaupapa" hospital occupancy ran 73.3% with 16,581 patient days accommodated in 62 beds.

Information on number of patients treated and patient days is broken down for each type of hospital, by ownership of hospital and also by islands in Exhibits 1 and 2.

It must be borne in mind that only numerical adequacy has been discussed. Adequacy of the physical condition of buildings, equipment and personnel will influence the evaluation of need.

(b) AVERAGE LENGTH OF STAY

Time does not permit a detailed study of the average length of stay as it relates to ownership, rate of occupancy and costs at present writing. A tabulation of some data on length of stay is included below for the record:

TABLE XVI — AVERAGE LENGTH OF HOSPITAL STAY PER PATIENT, BY TYPE OF HOSPITAL, TERRITORY OF HAWAII, 1945

TYPE OF HOSPITAL	DAYS AV. STAY IN HOSPITAL
General	8.7
Allied special	
Maternity	6.1
Pediatric	6.0
Orthopedic	74.0
Convalescent and chronic	98.8
Tuberculosis	208.0
Mental and mental defective	275.3
Leprosy	-

TABLE XVII — AVERAGE LENGTH OF HOSPITAL STAY IN GENERAL AND ALLIED SPECIAL HOSPITALS, BY OWNERSHIP AND BY ISLANDS, TERRITORY OF HAWAII, 1945.

ISLAND	Days Av. stay in Hospitals by Ownership				
	All	Non-profit.	Prop. Ind.	Prop. Corp.	Govt.
Territory, total	8.5				
Oahu	8.1	8.3	6.3	7.1	-
Hawaii	9.9	-	10.3	9.4	10.2
Kauai	8.8	8.8	5.4	9.6	-
Maui	9.1	-	-	9.5	8.5
Lanai	4.6	-	-	4.6	-
Molokai	6.0	7.0	-	4.0	-

Statistics compiled by Blue Cross Plans in 1943 indicated an average stay of 7.8 days. 1/ Data collected by the American Hospital Association in 1945 covering 4270 general and allied special hospitals indicated an average stay of 9.6. 2/ Comparison with Hawaii average stay of 8.7 indicates that persons in Hawaii on the average in 1945 stayed in hospitals for a shorter period than on the mainland.

3. Hospital Costs.

No very extensive analysis is possible at this time on hospital finances because of the sketchy and incomplete data received from many of the hospitals and the lack of any data at all from others. Correlating the non-uniformy reported data by hand would be an arduous task and would probably be productive of little value for analysis. Upon receipt from Chicago of the punch cards and machine tabulations some interesting financial facts may be available.

The following tables, while not covering all the hospitals, have some implications of interest.

(a) OPERATING INCOME AND EXPENSE

In Table XVIII on Operating Income and Expense, only such hospitals are included which reported both income and expense. Thus the statistics cover only 32 of the 61 hospitals in the Territory. The data were requested in a prescribed manner so as to assure exclusion of non-operating income and expense. Income from services rendered to patients was separated from donations, contributions, endowment or investment income and subsidies from government, and the income from services only was included as operating income.

In the same manner only operating expense was used, omitting expenditures for taxes, replacement, depreciation, insurance, etc.

1/ Report, Hospital Service Plan Commission, American Hospital Association, p. 55.

2/ Ray Hudenburg, Hospitals 20:52. October 1946

TABLE XVIII	OPERATING INCOME & EXPENSE REPORTED BY HOSPITALS, CLASSIFIED BY TYPE AND OWNERSHIP, TERRITORY OF HAWAII - 1945				
Type and Ownership	No. of Hospitals Reporting	Patient Days	Operating Income Total	Operating Expense	
				Total	Average per day
General & Allied Special					
Non-profit	8	278,176	2,914,619	3,017,500	10.85
Prop.-Ind.	5	11,954	112,465	82,209	6.88
Prop.-Corp.	14	83,460	338,052	641,054	7.68
Government*	2	37,737	297,195	413,810	10.97
Tuberculosis					
Government*	2	232,053	118,776	967,685	4.17
Mental					
Government*	1	402,089	83,793	785,597	1.95
Total	32	1045,469	3,864,900	5,637,855	5.39

*Only those government operated hospitals were included which reported income from patient in addition to income from government for operation.

(b) COST PER PATIENT DAY.

Again in the table below, only operating costs, exclusive of depreciation, taxes, equipment, replacements, etc., are included.

TABLE XIX	COST FOR PATIENT DAY IN HOSPITALS BY TYPE OF OWNERSHIP AND BY COUNTY, TERRITORY OF HAWAII - 1945			
	Oahu.	Maui.	Kauai.	Hawaii.
General	10.40	9.34	8.00	9.96
Non-profit	10.64	8.57	8.10	-
Proprietary				
Individual	5.87	-	9.48	6.47
Corporation	8.22	8.64	7.44	7.10
Government	-	10.55	-	10.85
General & Allied Spec.	10.83	-	-	-
Convalescent & Chronic	4.32	-	-	-
Tuberculosis	3.75	5.32	5.26	4.57
Mental and nervous	1.95	-	-	-
Mental Defective	2.34	-	-	-

(c) PAY STATUS OF PATIENTS DISCHARGED

An interesting, but only partial, analysis was made possible from data collected from 43 of the 61 hospitals, giving an indication that 70% of persons discharged from these hospitals paid their own way (either personally or by means of insurance); that 6.7% were paid for by some governmental agency (Department of Public Welfare, Veterans' Administration, U. S. Public Health Service, EMIC); that the plantations paid for 19% and that only 3.7% of patients were paid for by means not tabulated or were treated without the hospital receiving pay from any source. One-half of the 3.7% of non or other payment patients were reported by government operated hospitals so that they were actually paid for by government. They were not classified as "government pay" in order that they could be kept separate from those contracted for by governmental agencies.

TABLE XX PAY STATUS OF PATIENTS DISCHARGED FROM HOSPITALS OF ALL TYPES, BY COUNTIES, TERRITORY OF HAWAII, 1945

By County	No. Hosp. Rep.	Pay Status of Patients discharged. Total Pts. Rep'd.	Self Pay		Gov't Pay		Plantation Pay		Other & Non-pay	
			No.	%	No.	%	No.	%	No.	%
Honolulu	17	35,151	28,983	82.5	2481	7.1	2601	7.4	1086	3.1
Hawaii	16	8,290	4,033	48.6	630	7.6	3015	36.4	612	7.4
Maui	4	5,621	2,813	50.0	275	4.9	2352	41.9	181	3.2
Kauai	6	3,910	1,531	39.8	138	3.6	2155	56.0	86	.6
Total	43	52,972	37,360	70.5	3524	6.7	10,123	19.1	1965	3.7

A more detailed analysis of pay status according to ownership of hospital is included in Exhibit #4. 1/

An anylysis is possible from some of the schedules of the proportionate expense by departments and services rendered in the hospital, i.e., administration, diet, housekeeping, professional services, pharmacy and drugs, x-ray, laboratory, etc., and in some cases data are available in such form that these separate categories may be broken down for salaries, supplies and other.

1/ Exhibit #4 Pay Status of Patients discharged reported by hospitals of all types, by ownership and county, Territory of Hawaii, 1945.

B. SEPARATE COUNTIES

1. Hawaii County

(a) Number of Hospitals: total all hospitals. 19

By Ownership:		
Non-profit	0	
Proprietary, Individual	7	
Proprietary, Corporation (Plantation)	8	
Government	4	19
By type:		
General	17	
Maternity	1	
Tuberculosis	1	19

(b) Number of Beds: total beds, all types. 814

By ownership:		
Proprietary, Individual	91	
Proprietary, Corporation	226	
Government	497	814
By type:		
General	581	
Maternity	8	
Tuberculosis	225	814
By area:		
General and Maternity Hospitals		
Hilo City	250	
Hawaii, excl of Hilo City	339	
	589	

(c) Ratio General and Allied Special Beds to 1,000 Population:

Hawaii County	8.3
Hilo City	9.0
Hawaii, excl. of Hilo City	7.9
Plantation	9.0

(d) Patients treated and Patient days in all Hospitals:

	No.	Days.
By ownership:		
Proprietary, Individual	1306	13,486
Proprietary, Corporation	3625	33,995
Government	4861	125,018
	9792	172,499
By type:		
General and Maternity	9446	93,384
Tuberculosis	346	79,115
	9792	172,499

(e) Percent Occupancy:

By ownership:	
Individual	40.6%
Corporation	41.2
Government, excl. tuberculosis	46.2
By type:	
General	43.4
Tuberculosis	96.3

(f) Average length of stay:

By ownership:	
Individual	10.3 days
Corporation	9.4
Government, excl. tuberculosis	10.2
By type:	
General hospitals	9.9
Tuberculosis hospitals	229.0

(g) Pay status by discharges:

	Number.	Percent.
All Hospitals:		
Number reporting - 16		
Self pay	4033	48.6
Government pay	630	7.6
Plantation pay	3015	36.4
Other and non-pay	612	7.4
	8290	100.0
Individual-owned hospitals:		
Number reporting - 7		
Self pay	1290	99.7
Government pay	4	.3
	1294	100.0
Corporation-owned hospitals:		
Number reporting - 5		
Self pay	578	19.4
Government pay	76	2.1
Plantation pay	2296	78.5
	2950	100.0
Government General hospitals:		
Number reporting - 3		
Self pay	2165	28.8
Government pay	545	11.6
Plantation pay	719	58.4
Non-pay	493	1.2
	3922	100.0
Government other hospitals:		
Number reporting - 1		
Government pay	5	4.0
Non or other	119	96.0
	124	100.0

(h) Outpatient visits:

	Number
General hospitals:	
Individual-owned	0
Corporation-owned	118,654
Tuberculosis	4,066

(i) Per capita cost:

General hospitals, all	$ 9.96
Individual-owned	6.47
Corporation-owned	7.10
Government-owned (tuberculosis not incl.)	10.85
Tuberculosis	4.57

Kalawao County

(a)	Number of hospitals	1
	Ownership: governmental	
	Type: leprosy	
(b)	Number of beds	62
(c)	Ratio beds to population - not pertinent.	
(d)	Patients treated:	324
	Patient days	16,581
(e)	Percent occupancy	73.3%
(f)	Average length of stay	51.2 days

2. Kauai County

(a)	Number of Hospitals: total hospitals.		6
	By ownership:		
	Non-profit	1	
	Proprietary, Individual	1	
	Proprietary, Corporation(Plantation)	3	
	Government	1	6
	By type:		
	General	4	
	Convalescent & chronic	1	
	Tuberculosis	1	6
(b)	Number of Beds: total beds, all types.		286
	By ownership:		
	Non-profit	93	
	Proprietary, Individual	14	
	Proprietary, Corporation	64	
	Government	115	286
	By type:		
	General	167	
	Convalescent & chronic	~~115~~ 4	
	Tuberculosis	- 115	286
(c)	Ratio General and Allied Special Beds to 1,000 Population:		
	Kauai County	4.8	
	Plantation	4.6	

(d) Patients treated and Patient days in all Hospitals:

	Number	Days
By ownership:		
Non-profit	2014	12,781
Proprietary, Individual	350	1,884
Propietary, Corporation	1212	13,105
	3735	79,987
By type:		
General	3571	31,310
Convalescent & chronic	4	11,460
Tuberculosis	159	37,217
	3735	69,987

(d)	Percent Occupancy:	
	By ownership:	
	Non-profit	52.8%
	Individual	36.8
	Corporation	56.1
	By type:	
	General	52.5
	Convalescent & chronic	100.0
	Tuberculosis	88.7

(f) Average length of stay:

By ownership:	
Non-profit	8.8 days
Individual	5.4
Corporation	9.6
By type:	
General hospitals	8.8
Convalescent & chronic	365.0
Tuberculosis hospitals	234.0

(g) Pay status by discharges:

	Number	Percent
All hospitals:		
Number reporting - 6		
Self pay	1531	39.8
Government pay	138	3.6
Plantation pay	2155	56.0
Other and non-pay	86	.6
	3910	100.0
Non-profit hospitals:		
Number reporting - 1		
Self pay	751	32.2
Government pay	81	3.5
Plantation pay	1478	63.4
Non-pay	22	.9
	2332	100.0
Individual-owned hospitals:		
Number reporting - 1		
Self pay	341	100.0
Corporation-owned hospitals:		
Number reporting - 3		
Self pay	439	37.6
Government pay	57	4.8
Plantation	677	57.4
Non-pay	3	
	1176	100.0
Government-owned:		
(General Hospital)		
Number reporting - 1		
Non pay	16	100.0

(h) Outpatient visits:

General hospitals:	
Non-profit	346
Corporation-owned	45,001
	45,347

(i) Per capita cost:

General hospitals	$8.00
Non-profit	8.10
Individual-owned	9.48
Corporation-owned	7.44
Tuberculosis	5.26

3. Maui County

(a) Number of Hospitals: total hospitals. 10

By ownership:		
Non-profit	1	
Proprietary, Individual	0	
Proprietary, Corp.(Plantation)	5	
Government	4	10
By type:		
General	9	
Tuberculosis	1	10

(b) Number of Beds: total beds, all types. 653

By ownership:		
Non-profit	28	
Proprietary, Corporation	289	
Government	336	653
By type:		
General	451	
Tuberculosis	202	653
By area:		
General Hospitals:		
Island of Maui	378	
Island of Lanai	26	
Island of Molokai	47	
	451	

(c) Ratio General and Allied Special Beds to 1,000 Population:

Maui County	8.3
Island of Maui	8.3
Island of Lanai	7.2
Island of Molokai	8.9
Plantation	15.6

(d) Patients treated and Patient days in all Hospitals:

	Number.	Days.
By ownership:		
Non-profit	687	4824
Proprietary, Corporation	5900	50503
Government	3120	86289
	9707	141616
By type:		
General	9422	79464
Tuberculosis	285	62152
	9707	141616

(e) Percent Occupancy:

By ownership:	
Non-profit	47.2%
Corporation	47.9
Government, excl.tuberculosis	49.3
By type:	
General	48.2
Tuberculosis	84.0

(f) Average length of stay

By ownership:

Non-profit	7.0 days
Corporation	8.6
Gov't excl. Tuberculosis	8.5

By type:

General hospitals	8.4
Tuberculosis hospitals	218.0

(g) Pay status by discharges:

	Number	Percent
All hospitals:		
Number reporting - 4		
Self pay	2813	50.0
Government pay	275	4.9
Plantation pay	2352	41.9
Other and non-pay	181	3.2
	5621	100.0
Corporation-owned hospitals:		
Number reporting - 2		
Self pay	1252	37.4
Government pay	36	1.0
Plantation pay	2063	61.6
	3351	100.0
Government General hospitals:		
Number reporting - 1		
Self pay	1561	72.3
Government pay	239	11.1
Plantation pay	289	13.4
Non-pay	70	3.2
	2159	100.0
Government other hospitals:		
Number reporting - 1		
Self pay	10	.8
Other or non-pay	111	99.2
	121	100.0

(h) Outpatient visits:

General hospitals:	
Non-profit	4773
Corporation-owned	77282
Tuberculosis	2135

(i) Per capita cost:

General hospitals, all	$ 9.34
Non-profit	8.57
Corporation-owned	8.64
Govt. owned (tbc not incl.)	10.55
Tuberculosis	5.32

4. Honolulu County.

(a)	Number of Hospitals: total.			25
	By ownership:			
	Non-profit		10	
	Proprietary, Individual		6	
	Proprietary, Corporation (Plant.)		5	
	Government		4	25
	By type:			
	General		10	
	Allied special		4	
	Maternity	2		
	Pediatric	1		
	Orthopedic	1		
	Convalescent & chronic		7	
	Tuberculosis		1	
	Mental		2	
	Leprosy		1	25
(b)	Number of Beds: total, all types.			3907
	By ownership:			
	Non-profit		1541	
	Proprietary, Individual		55	
	Proprietary, Corporation		204	
	Government		2107	3907
	By type:			
	General		978	
	Allied special		237	
	Maternity	109		
	Pediatric	100		
	Orthopedic	28		
	Convalescent & chronic		276	
	Tuberculosis		485	
	Mental		1868	
	Leprosy		63	3907
	By area: (general and allied special only)			
	Honolulu City		897	
	Honolulu County, excl. of city		318	
	C&C of Honolulu		1215	
(c)	Ratio General and Allied special beds to 1,000 Population:			
	Honolulu City		3.4	
	Honolulu County		3.4	
	Honolulu County, excl. of City		3.5	
	Plantation		11.2	

(d) Patients treated and Patient Days in all Hospitals:

By ownership:	Number.	Days.
Non-profit	32,918	453,219
Proprietary, Individual	386	12,117
Proprietary, Corporation	5,500	39,185
Government	2,866	645,255
	41,670	1,149,776

By type:	Number.	Days.
General	31,231	258,020
Allied special		
Maternity	2,882	17,601
Pediatric	3,524	21,104
Orthopedic	109	8,030
Convalescent & chronic	868	84,037
Tuberculosis	887	169,901
Mental	2,129	586,124
Leprosy	40	4,959
	41,670	1,149,776

(e) Percent Occupancy:

By ownership:	
Non-profit	90.2%
Proprietary, Individual	60.4
Proprietary, Corporation	52.6
By type:	
General	80.5
Allied special	
Maternity	114.8
Pediatric	80.3
Orthopedic	78.5
Convalescent & chronic	83.4
Tuberculosis	96.0
Mental & nervous	95.8
Mental defective	70.2
Leprosy	21.6

(f) Average length of stay:

By ownership:	
(Not significant)	
By type:	
General	8.2 days
Allied special	
Maternity	6.1
Pediatric	6.0
Orthopedic	74.0
Convalescent & chronic	98.8
Tuberculosis	191.0
Mental	275.3
Leprosy	124.0

(g) Pay Status of Discharges:

All Hospitals:	Number	Percent
Number reporting - 17		
Self pay	28,983	82.5
Plantation pay	2,601	7.4
Government pay	2,481	7.1
Other and non-pay	1,086	3.0
	35,151	100.0

	Number.	Percent.
Non-profit hospitals:		
Number reporting - 7 (incl. Leahi)		
Self pay	25,853	89.9
Plantation	-	
Government pay	1,979	6.9
Other or non-pay	938	3.2
	28,770	100.0
Proprietary, individual-owned:		
Number reporting - 2		
Self pay	312	
Proprietary, corporation-owned:		
Number reporting - 5		
Self pay	2,715	50.3
Plantation pay	2,601	48.2
Government pay	83	1.5
	5,399	100.0
Government owned:		
Number reporting - 3		
Self pay	103	15.4
Plantation pay	-	
Government pay	419	62.5
Other or non-pay	148	22.1
	670	100.0

(h) Outpatient visits:

General hospitals, Corporation-owned, 4 reporting	70,831
Orthopedic	1,643
Tuberculosis	2,369
Mental	50,600

(i) Per capita cost:

General only	
Non-profit	$10.64
Individual owned	~~5.84~~ 5.87
Corporation owned	8.22
Convalescent & chronic	4.32
Tuberculosis	3.75
Mental & nervous	1.95
Mental deficient	2.34

CHAPTER IV - SOME INDICATIONS

While the factors discussed in the foregoing chapters constitute only a rough approach to the adequacy of hospital beds in the Territory, some very broad inferences may be drawn from even this limited analysis.

General Hospitals

Certainly no more general hospital beds are needed on the islands of Hawaii, Maui, Kauai, Molokai and Lanai, as is clearly shown by ratios and the consistently low occupancy rates. Here is evidence of the need to review the necessity for maintaining at someone's expense almost double the number of beds adequate to serve the community, and the obvious need, envisioned by the sponsors of the Federal Hospital Construction Act, for an integration and consolidation of hospital services.

While at first glance on Oahu both ratio and occupancy indicate a need for more beds, particularly in Honolulu, there are certain factors that must not be overlooked in any plans for expansion of general hospital facilities on that island.

1. Consolidation of Hospitals and Integration of Service.

"The pattern of growth and development of American hospitals has been one of individual action and self-reliance. Hospitals have grown up as self-sufficient units and each community has developed a hospital program in terms of its own resources. Because there has been no over-all planning, the large city hospitals have an abundance of skills and services which often overlap while there is a dearth of services, personnel and equipment in the smaller hospitals.

"Working alone many hospitals have had to endure a poor quality of service. A number of experiments have demonstrated that groups of hospitals working together can make great strides in improving and maintaining standards of care. Medical and hospital isolationism is no longer practical; it appears that outpost hospitals should be organically affiliated with larger institutions and that there is need for a close-knit system which will permit a rapid dissemination of ideas, a healthy exchange of opinion among technicians, and a pooling of expensive facilities."1/

1/ Relationship among hospitals. Hospital Survey News Letter, December 1945. Commission on Hospital Care.

Where isolation is not a factor, as it is at Hana and Lahaina on Maui; Kohala and Kona on Hawaii; Kilauea on Kauai and Kahuku on Oahu, and particularly where good roads are no hindrance to distance, it would appear that consolidation of several hospitals into one centrally located hospital is indicated. Several such consolidations present themselves.

On Oahu, a consolidation of the Aiea, Waipahu, Ewa and Wahiawa hospitals, including perhaps even Waialua, could result in a community hospital situated as centrally as possible to serve that section of Oahu.

Instead of separate hospitals at Wailuku, Paia and Puunene, only a few minutes driving time apart from each other over wide superhighways, one hospital central to all three locations could serve that area. The occupancy rates of these hospitals are low, but more important, the buildings at Paia and Malulani are old and there has been discussion of replacement.

On the Hamakua Coast on Hawaii there are six hospitals with a total of 144 beds, not one of which exceeds an occupancy of 44.5%. Collectively and individually they rate way below the lower limit of occupancy based on experience for the country as a whole. See graph following page 29.

This is by no means the sum total of what could be accomplished by consolidation. A study of the situation island by island, with consideration of the factors of ownership, accessibility, population concentrations, etc., must be made, but broadly speaking the indication for integrated planning is the only point to be made here. In each of the three main areas mentioned: Oahu, Maui and Hawaii, plans are even now being considered - some are even in the blueprint stage - that call for enlargement or replacement of individual hospitals, without much regard, if any, for contiguous areas or already existing facilities.

An example of such isolated planning and building is a fine, modern hospital of 27 beds on Hawaii built in 1938 with an average occupancy of only 30% in 1945 and located at the extreme end of an area made up of three plantations under the same management. The doctor in charge spends hours on the road between it and its large outpatient clinic, and the two small hospitals (one of 9 beds, the other 11 beds) located five and eight miles distant, where he has to make rounds and hold clinics regularly. Each hospital has <u>one</u> trained registered nurse who bears the full burden of

rounds with the doctor, attendance at busy clinics, keeping clinical records, bookkeeping, supervision of personnel and services in the kitchen, laundry, housekeeping and general maintenance. Nurse and doctor were on 24 hours call since there was no other qualified relief. A single centrally located hospital would increase the distance to the hospital for patients and visitors it is true, but by combining the services of the three registered nurses, each could better supervise a smaller field of activity, could give greater aid in training the non-professional personnel, and afford relief for necessary time off. The same holds for duplication of personnel and equipment for laboratory, physiotherapy and other adjuncts to medical care. In the larger hospitals better trained technicians most probably would be demanded than now serve the small hospitals, with accompanying higher personnel cost, but it may be expected that better trained personnel is productive of better medical care.

Consideration of nurse and technical personnel must be placed high on the list for attention in any planning for the future and utmost economy must be practiced in the expenditure of such personnel, not only because of the great shortage prevalent throughout the field here as elsewhere, but because of the discontent that is engendered by the geographic and social isolation these persons must accept with their jobs. The short stay and high rate of turnover highlights the need to bring these people closer together wherever possible, rather than scattering them thinly over large areas without the companionship of others of the same race, professional and social standing.

The dispensaries, presently such a vital part of plantation operations, need not be sacrificed to any plans for consolidation of hospitals, but some reorganization of this service may be worthy of consideration. One well-equipped plantation hospital has solved its problem by establishing first-aid stations in outlying camps with first-aid personnel in attendance, bringing to the hospital by means of plantation transportation only such patients as need physician's services. A health center set-up may solve the problem in other cases.

2. Army and Navy Hospitals.

The figures and ratios cited in this report do not take into consideration beds in the Army and Navy hospitals for the accommodation of dependents of military personnel and civilians entitled to medical care in such hospitals. Federal

hospitals (in Hawaii, the Army and Navy hospitals) are excluded from the survey in accordance with the survey procedures. However, in any consideration of adequacy of beds for the Territory, and particularly for Honolulu and the rest of Oahu, beds set aside for such use of military dependents should be taken into account since the patients who would occupy such beds are included in the civilian population figures.

Similarly the veteran population, variously estimated between 20,000 and 30,000, will affect the ratio of beds to population if hospitalization is provided in military hospitals.

Also to be considered is the withdrawal of U. S. Public Health Service patients from civilian hospitals.

The army hospitals on Oahu in 1946 admitted 849 veterans and 2,105 Army dependents, according to a report of the Surgeon's Office of the Army Ground Forces, Pacific. The patient days reported for these two classes of patients were given at 20,489 and 27,184, respectively, being the equivalent of 162 beds at 80% occupancy.

According to report publicized by the Commanding Officer of the New Tripler Hospital, bed allotments in the new hospital will include:

250 beds for veterans
100 for dependents of military personnel and civilians entitled to medical care
100 for U. S. Public Health Service

adding 20% to allow for the dispersion factor necessary to separate male and female patients and special services.1/

The Aiea Naval Hospital operated 36 beds for Navy dependents in 1946 and reported a total of 3701 patient days for these patients. This was on a limited service with no provision for maternity and pediatric care. Plans, pending Washington approval, contemplate 175 to 200 beds for Navy dependents at the Aiea Naval Hospital.

3. Long-term hospitalized patients.

Although no change in ratio of general beds to population would accrue from the removal of chronic and convalescent patients from general hospitals to special facilities if such were made available, or from the removal to tuberculosis facilities of the 69 tuberculosis patients from Wahiawa Hospital, the beds thus made available for acute illness

1/ Honolulu Advertiser. Jan. 23, 1947.

would accommodate more patients numerically than at present because of the shorter stay. What the influence would be on percent of occupancy, is not certain.

While the ratios and discussions in the foregoing have been set up on the basis that there be a segregation of long-term patients (chronic and convalescent, tuberculosis and mental) from the acutely ill patients (usually occupying hospital beds for a period less than 30 days and therefore designated as "short-term") there is developing a trend of thinking among hospital authorities on the mainland that vizualizes a broader role for the general hospital in encouraging the treatment of long-term patients and the development of plans to bring special hospitals, such as tuberculosis and mental hospitals into closer coordination with the general hospital.

The role of the general hospital as evolved in deliberations by the Commission on Hospital Care in Chicago are expressed in the following condensation of recommendations published in the Michigan Hospital Survey. 1/

1/The Role of the General Hospital, p. 5-31, Report of the Michigan Hospital Survey, 1946. W.K. Kellogg Foundation, Battle Creek, Michigan

4. The role of the General Hospital.

Definition of the function of the general hospital and the future responsibilities it will assume in the care of all types of illness are basic to an estimate of the need for expansion of existing hospital facilities in any area.

The role of the general hospital is expanding. Its facilities are being organized to provide care for all types of illness. Special services and equipment are being added to its already complex armamentarium. Greater emphasis is being placed upon care for ambulant patients. The general hospital has assumed responsibility for preventive as well as curative medicine. It can serve as the coordinating center for various governmental and voluntary health programs. The effective organization of its life-giving and life-saving equipment and personnel more and more is being accepted as a community responsibility.

Recommendations concerning hospital organization and policy problems are presented in the following paragraphs.

In general:
That general hospitals, whenever possible, provide for the care of communicable diseases, certain types of cases of tuberculosis, nervous and mental diseases, chronic diseases and convalescent patients.

That the general hospital be organized as the focal point through which the health services of the community are integrated.

That an integrated program be established between the general hospital, tuberculosis sanatoria, nervous and mental disease hospitals and institutions for chronic and convalescent patients, to the end that the scientific equipment and professional personnel in the general hospital may be used to assist in the care of patients in those institutions.

That governmental units use voluntary general hospital facilities for the care of medically indigent patients as far as possible and provide a method for the equitable remuneration of general hospitals for services to those patients.

re tuberculosis:
To establish new facilities for tuberculosis adjacent to and in relation with general hospitals, so that technical facilities and competent medical personnel may be available for surgical procedures and other special services required by these patients.

To continue the maintenance of existing sanatoria and to provide convalescent and rehabilitation programs in them.

To establish relationship between the general hospital and the tuberculosis sanatorium, in order to provide surgical care and consultation services in other special fields of medicine.

To develop a practice whereby state and county governments that now provide care for tuberculosis subsidize the care of tuberculosis patients in approved voluntary general hospitals.

re: nervous and mental diseases.
That large general hospitals provide facilities for the diagnosis of nervous and mental patients residing in the area served by the hospital and for the treatment of those patients who are not in need of long-term institutional care.

That arrangements be made with governmental units for the subsidy of care of certain types of nervous and mental patients in general hospitals.

re: chronic diseases
That special facilities be constructed adjoining large general hospitals for the care of chronically ill patients.

That provision be made for the care of certain types of chronic diseases in general hospitals in small communities.

That regulation of nursing homes for the care of chronic patients be established to guarantee a high grade of service in this type of institution.

re: convalescent patient.
That the general hospital include facilities for the care of short-term convalescent patients in special units or in separate pavilions.

That the general hospital provide such special facilities (dietetic, therapeutic) as are indicated for convalescent patients - both those remaining in the hospital and those who, while able to return to their homes, may require such special service.

re: rehabilitation programs.
Hospitals assist in the establishment of, or correlate their services with, community centers through which all types of rehabilitation service and vocational training are made available to the disabled individual, enabling him to achieve the maximum rehabilitation.

re: Hospital diagnostic facilities.
That hospitals and public health departments coordinate their efforts to conserve space, equipment and personnel by integrating the functions of preventive and curative medicine, bearing in mind, of course, the limitations of their respective fields and the part each should assume in the program.

That the out-patient department, organized and developed on sound principles, should be an integral part of the hospital and of the health service of the community. Out-patient departments should provide the common ground upon which the activities of the department of public health and those of the medical profession can be integrated and cooperatively developed.

That hospitals make their laboratories and other diagnostic facilities readily available to all members of the local medical profession as well as to the members of their medical staffs. Diagnostic clinics should be established in the interest of both the general practitioner and the patient.

re: health promotion in the hospital.
That hospitals conduct continuing programs in health promotion for both patients and public.

That such programs be both specific and general in type: specific in that they be directed to the immediate interest of the patient, his relatives and friends, and general, in that they also include material of broad public interest.

That hospital programs in health promotion be coordinated with those of local, state and national public health agencies.

re: physicians' offices in hospitals.
That medical services can be more effectively distributed if the physician's time is conserved and diagnostic facilities are made readily available to him, therefore, hospitals should make office space available when conditions permit and when such arrangements are desired by members of their medical staffs.

That arrangements for hospital office space be flexible enough to permit either full-time or part-time occupancy of facilities.

That the use of office space and hospital equipment be financed, to the extent they are used by physicians, under arrangements which are equitable to both physicians and hospital.

Determination as to whether the hospitals of Hawaii shall adopt this broader role for general hospitals will influence the decision as to whether the various types of hospitals which the ratios indicate are needed should be developed and to what extent.

Allied Special Hospitals

The decision on the role of the general hospital will influence whether expansion of these separate facilities is indicated.

Tuberculosis Beds

While the ratio of tuberculosis beds to population would indicate that no more tuberculosis beds are needed, the percent occupancy and long stay are contrary indications. The waiting list which will be considerably enlarged by the new cases discovered by the mass x-ray survey just made confirm the need for more beds. This subject requires much more study than the limited consideration in this report as very apparently there are other important factors at work in this field which have an influence on the number of beds needed.

While no figures are available to support this comment, one reason given for the high rate of occupancy is the lack of convalescent facilities to which patients could be transferred when the infectious stage is passed and full hospitalization is no longer necessary.

Mental Beds

A need for more beds is clearly indicated by ratio and occupancy rate, but the extent of need deserves further study. While on a ratio basis some 1350 additional beds are indicated, no such large need is making itself felt either at the mental institution or in the community. Certainly provision should be made to relieve the over-crowding which the 118.4% occupancy of normal bed capacity demonstrates.

The type of facilities to be added - whether custodial or treatment - and where these should be added to best serve the population - whether at Kaneohe or as part of the general hospital, or hospitals - are the problems calling for most careful evaluation.

Mental Defective Beds

Waimano Home has apparently caught up with demand for beds in the past few years as is demonstrated by the absence of a waiting list. Unfortunately no standards are available to judge

the numerical adequacy of beds for this category of patient.

The problem at Waimano is the replacement of some present facilities and provision for segregation and special purposes. One need that has been developing in recent years is for nursery facilities. Frequent requests have been coming in for the institution to accept mentally defective infants.

Leprosy Beds

The occupancy rate for Kalihi Hospital indicates no need and confirms verbal statements that need for these beds is diminishing. The occupancy rate of the hospital unit at Kalaupapa Settlement of 73.3% is high for a hospital of 62 beds.

Chronic and Convalescent Beds

Comment on chronic and convalescent beds was left to the last as consideration of what should be done in this seriously neglected field depends upon what thinking is adopted in the development of general hospitals and what it is decided to do with convalescent patients in the mental and tuberculosis hospitals.

If the general hospitals adopt the broad role as outlined, then units for the chronic and convalescent patient will want to be developed as part of the general hospital. If this trend is not followed, but plans are adopted for the consolidation of the several general hospitals in an area, then the better of the facilities to be abandoned may lend themselves for conversion into chronic and convalescent homes (or homes for the aged), at least until such time as a well-rounded program for the care of the convalescent and chronic patient may be developed for each island or for the whole Territory (perhaps coupled with care for the aged, since these two problems are so intertwined).

The communities on Oahu, Kauai and Maui are well aware of the need for convalescent-nursing home facilities and care of their chronic and aged population. The Convalescent-Nursing Home Committee on Oahu has raised a sizeable fund and has secured a site for the establishment of a home. On Kauai the American Legion has been entertaining the idea of securing the abandoned tuberculosis preventorium at Kealia to establish a combination old age and chronic care institution. On Maui a drive was on for funds to build such a home while the hospital survey was in process.

It is emphasized again that only numerical adequacy has been discussed in this report. Adequacy of buildings, equipment and personnel will need to be studied to determine need.

All of the foregoing is related to needs evaluated on present capacity, present population and present utilization. No attempt has been made to project future needs based on future population.

EXHIBIT #1

UTILIZATION OF HOSPITALS, BY TYPE OF HOSPITAL
TERRITORY OF HAWAII, 1945

Type of Hospital	Beds 1945	Patients Treated	Patient Days	Percent Occupancy	Average Stay
General	2,089	53,534	463,320	60.8	8.7
Non-profit	788	28,217	240,624	83.6	8.5
Prop. Indiv.	112	1,871	16,660	40.7	8.9
Prop. Corp.	783	16,096	135,996	47.6	8.4
Governmental	406	7,350	70,040	47.3	9.5
Allied Special					
Maternity	42	2,882	17,601	114.8	6.1
Pediatric	72	3,524	21,104	80.3	6.0
Orthopedic	28	109	8,030	78.5	74.0
Convalescent & Chronic	276	868	84,037	83.4	98.8
Tuberculosis	1,027	1,677	348,385	93.0	208.0
Mental	1,868	2,129	586,124	86.0	275.3
Leprosy	125	--	17,869	39.2	--

EXHIBIT #2

UTILIZATION OF GENERAL AND ALLIED SPECIAL HOSPITALS[1/]
TERRITORY OF HAWAII, BY ISLANDS, 1945

Island	Ownership	Bed Complement 1945	Patients Treated	Patient Days	Percent Occupancy	Average Stay
Oahu	Non-profit	805	31,934	263,601	89.7	8.3
	Prop. Indiv.	11	312	1,969	49.0	6.3
	Prop. Corp.	204	5,500	39,185	52.6	7.1
		1,020	37,746	304,755	81.8	8.1
Hawaii	Prop. Indiv.	91	1,306	13,486	40.6	10.3
	Prop. Corp.	226	3,625	33,995	41.2	9.4
	Government	272	4,515	45,903	46.2	10.2
		589	9,446	93,384	43.4	9.9
Kauai	Non-profit	93	2,014	17,781	52.8	8.8
	Prop. Indiv.	14	350	1,884	36.8	5.4
	Prop. Corp.	60	1,208	11,645	53.2	9.6
		167	3,572	31,310	52.5	8.8
Maui	Prop. Corp.	244	4,803	45,658	51.3	9.5
	Government	134	2,835	24,137	49.3	8.5
		378	7,638	69,795	50.6	9.1
Lanai	Prop. Corp.	26	760	3,506	36.9	4.6
Molokai	Non-profit	28	687	4,824	47.2	7.0
	Prop. Corp.	19	337	1,339	19.3	4.0
		47	1,024	6,163	35.9	6.0
Total all islands		2,227	60,186	508,913	62.6	8.5

1/ "General and allied special hospitals" includes maternity, pediatric and orthopedi; it excludes convalescent and chronic hospitals and nursing homes, mental, tuberculosis and leprosy hospitals.

EXHIBIT NO. 3
CODE LIST
HOSPITALS AND NURSING HOMES
Territory of Hawaii
1946 Survey

CODE NUMBER	HAWAII COUNTY	BED COMPLEMENT	OCCUPANCY RATE
1 - 1	Hakalau Plantation Hospital	24	39.7
1 - 2	Hamakua Mill Company Hospital	11	44.5
1 - 3	Hawaiian Agr. Co. Hospital	35	55.3
1 - 4	Hilo Memorial Hospital	183	51.5
1 - 5	Honokaa Sugar Co. Hospital	30	42.4
1 - 6	Kohala County Hospital	45	27.8
1 - 7	Kona Community Hospital	18	16.6
1 - 8	Kona Hospital	44	40.1
1 - 9	Lapahoehoe Sugar Co. Hospital	27	30.0
1 - 10	Matayoshi Hospital	26	60.2
1 - 11	Matsumura Hospital	8	25.9
1 - 12	Mitamura Hospital	9	44.4
1 - 13	Okada Hospital	6	69.1
1 - 14	Olaa Plantation Hospital	47	31.3
1 - 15	Ookala Hospital	9	34.0
1 - 16	Oto Hospital	16	33.8
1 - 17	Pepeekeo Hospital	43	43.3
1 - 18	Puumaile Hospital	225	96.3
1 - 19	Yamanoha Hospital	8	33.5
	HONOLULU COUNTY		
2 - 1	Berg, Bertha	5	100.0
2 - 2	Ewa Plantation Company Hospital	48	49.6
2 - 3	Honolulu Plantation Co Hospital	33	79.6
2 - 4	Kahuku Plantation Co. Hospital	34	62.7
2 - 5	Kalihi Hospital	63	21.6
2 - 6	Kaniloa, Nani	20	39.0
2 - 7	Kapiolani Maternity & Gyneco-logical Hospital	38**	122.0
2 - 8	Kauikeolani Childrens Hospital	72**	80.3
2 - 9	Kuakini Hospital	125	81.5
2 - 10	Leahi Hospital	485	96.0
2 - 11	Maluhia Home	176	84.0
2 - 12	Mannion, Sophie	8	62.5
2 - 13	Ogawa Lying-in Home	4	46.5
2 - 14	Oahu Sugar Company Hospital	52	45.8
2 - 15	Palolo Chinese Men's Home, Hospital Section	52	100.0
2 - 16	Queen's Hospital	330**	89.6
2 - 17	St. Francis Hospital	105**	109.7
2 - 18	Salvation Army Women's Home	4	50.5
2 - 19	Shriners' Hospital	28	78.5

CODE NUMBER	HONOLULU COUNTY	BED COMPLEMENT	OCCUPANCY RATE
2 - 20	Silva, Ida	11	90.0
2 - 21	Tamura Hospital	7	50.5
2 - 22*	Territorial Hospital	1150	95.8
2 - 28	Wahiawa General Hospital	107	70.9
2 - 29	Waialua Agric. Co. Hospital	37	32.8
2 - 30	Waimano Home	718	70.2
	KALAWAO COUNTY		
3 - 1	Kalaupapa Settlement Hospital	62	73.3
	KAUAI COUNTY		
4 - 1	Betsui Hospital	14	36.8
4 - 2	Koloa Sugar Company Hospital	22	27.0
4 - 3	McBryde Sugar Co. Hospital	4	100.0
4 - 4	Mahelona Memorial Hospital, Samuel	115	88.7
4 - 5	Waimea Hospital	38	67.9
4 - 6	Wilcox Memorial Hospital, G.N.	93	52.8
	MAUI COUNTY		
5 - 1	Hana County Hospital	30	30.6
5 - 2	Kula General Hospital	22	33.0
5 - 3	Kula Sanatorium	202	84.0
5 - 4	Lanai City Hospital	26	36.9
5 - 5	Malulani Hospital	82	60.6
5 - 6	Maunaloa Hospital	19	19.3
5 - 7	Maui Agricultural Company Hospital	80	50.7
5 - 8	Pioneer Mill Company Hospital	67	60.6
5 - 9	Puunene Hospital	97	45.0
5 - 10	Shingle Memorial Hospital	28	47.2

*Numbers 23 through 27 were assigned to hospitals which have been found to be discontinued and 3 Federal hospitals which are excluded from this study.

**Bed Complement increased from 1945 to 1946 as follows:

	1945	1946
Kapiolani	38	105
Kauikeolani	72	100
Queen's	330	370
St. Francis	105	165

EXHIBIT 4

PAY STATUS OF PATIENTS DISCHARGED
REPORTED BY HOSPITALS OF ALL TYPES
TERRITORY OF HAWAII - 1945.

Ownership By County	No. Hosp. Report-ing.	Total	Classification of Patient.							
			Self pay		Govt. pay		Plant. pay		Other & non-pay	
			No.	%	No.	%	No.	%	No.	%
Honolulu Total	17	35,151	28,983	82.5	2481	7.1	2601	7.4	1086	3.1
Non-profit	7	28,770	25,853	89.9	1979	6.9	-	-	938	3.3
Prop. indiv.	2	312	312	100.0	-	-	-	-	-	-
Prop. corp.	5	5,399	2,715	50.3	83	1.5	2601	48.2	-	-
Govt.	3	670	103	15.4	418	62.5	-	-	148	22.1
Hawaii Total	16	8,290	4,033	48.6	630	7.6	3015	36.4	612	7.4
Non-profit	-	-	-	-	-	-	-	-	-	-
Prop. indiv.	7	1,294	1,290	99.7	4	.3	-	-	-	-
Prop. corp.	5	2,950	578	19.4	76	2.1	2296	78.5	-	-
Govt. gen'l.	3	3,922	2,165	28.8	545	11.6	719	58.4	493	1.2
" other	1	124	-	-	5	4.0	-	-	119	96.0
Maui Total	4	5,621	2,813	50.0	275	4.9	2352	41.9	181	3.2
Prop. corp.	2	3,351	1,252	19.4	36	2.1	2063	78.5	-	-
Govt. gen'l	1	2,159	1,561	72.3	239	11.1	289	13.4	70	3.2
Govt. other	1	121	10	.8	-	-	-	-	111	99.2
Kauai Total	6	3,910	1,531	39.8	138	3.6	2155	56.0	86	.6
Non-profit	1	2,332	751	32.2	81	3.5	1478	63.4	22	.9
Prop. indiv.	1	341	341	100.0	-	-	-	-	-	-
Prop. corp.	3	1,176	439	37.4	57	4.9	677	57.7	3	-
Govt.	1	61	-	-	-	-	-	-	61	100.0
Total - all Islands	43	52,982	37,370	70.5	3524	6.7	10123	19.1	1965	3.7
Non-profit	8	31,102	26,604	85.5	2060	6.6	1478	4.8	960	3.1
Prop. indiv.	10	1,947	1,943	99.8	4	.2	-	-	-	-
Prop. corp.	15	12,876	4,984	38.7	252	2.0	7637	59.3	3	-
Govt.	10	7,057	3,839	54.4	1208	17.1	1008	14.3	1002	14.2

REFERENCES

	Page
Survey of Honolulu Hospitals. Lucius W. Johnson and Robert H. Onstott. Hawaii Medical Journal. November 1944	1
A Study of Tuberculosis Hospital Requirements in the City & County of Honolulu. Ruth Coogan, Chamber of Commerce of Honolulu. June, 1945.	1
A Study of the Need for an Open Community Hospital in Wahiawa. Ruth Coogan, Chamber of Commerce of Honolulu. December 1945.	1
Organization and Survey Procedure for a State Hospital Study; Scope of Study and Planning. Commission on Hospital Care, Chicago.	2
Hospital Construction Act. Public Law 725. 79th Congress.	3
Enabling Legislation. Model State Hospital Survey & Construction Act. Council of State Governments.	3
Hospital Schedules of Information. Commission on Hospital Care, Chicago.	7
State Hospital Study Manuals: Book I Study Procedures and Survey Work Material Book II Coding of Schedule Data Book III Tabulation of Schedule Data Book IV Social and Economic Factors in Hospital Planning.	9
Health Center Schedule of Information. Commission on Hospital Care, Chicago.	9
Survey to Determine Need of Home for Aged and Convalescent in Kauai County. Department of Public Welfare, Kauai County. June 1945.	18
Report of Dr. N. M. Benyas, President Honolulu County Medical Society. Hawaii Medical Journal, May 1944.	19
The Question of a Convalescent-Nursing Home. Margaret M. L. Catton. Hawaii Medical Journal, January 1944.	19
Report by Robert Perlstein, M.D., Leahi Hospital records.	22
The Small General Hospital, W. S. Rankin. The Hospital in Modern Society. Commonwealth Fund, 1943.	23

EXHIBITS